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Diary Dates

3–5 April 1992.

The Spring Conference.
Chimney House Hotel, Sandbach, Cheshire.

6 May 1992.

Mr A.Wade. "Martindale: The Man and the Book."

Society Members' Activities.

Recently in the Pharmaceutical Journal, Mr R. Drey reviewed Dr D. Wittop Koning's latest book, Apothekerspotten uit de Nederlanden. He described it as "an important addition to the literature on pharmaceutical ceramics."

On 10th. January 1992 Dr J. Burnby took part in a Wellcome Institute symposium on "Medical Education in Britain, 1200–1800." She presented a paper entitled, "An examined and free Apothecary."

Dr Rosemarie Dilg–Frank of Marburg has been busy with her husband Peter organising a symposium in Stuttgart on Paracelsus. They have also been involved with what she calls the "virulent Kolumbus bacillus", – 1492 and all that!

Mr F.H. Rawlings of Bristol has been participating in a University of Bristol course, "The Healing Art: a continuing study of the History of Medicine"; in October last he gave the lecture, "From Apothecary to pharmacist".

John Rylands university Library, Manchester is playing host to the 150th. anniversary exhibition of books and periodicals published by Springer Verlag, well known as a communicator of scientific and medical research. Publicity material features pharmaceutical artefacts from Mr W. Jackson's collection.

Dr W.E. Court continues as busy as ever. Between October 1991 and January 1992 he has delivered nine lectures. Three of them were on herbal medicine and its historical development, one on Biblical drugs, one on counter–prescribing and another on dental remedies of the past. Three were on bells, bell–ringing and bell–founding which may seem a far cry from pharmacy, until we remember bell–metal mortars. He is too chairman of the South Clwyd Branch of RPSGB.

Dr M.P.Earles was present on 19th.December 1991 when English Heritage unveiled a plaque at 14, Gower Street, London, WC1, the former home of the dentist James Robinson, (1813–1862). He writes, "On 19th. December 1846 Robinson became the first man in Britain to use ether following the discovery of its anaesthetic properties by the American dentist William T.G. Morton. Two days later the surgeon Robert Liston amputated a leg under ether. This dramatic medical event overshadowed and obscured Robinson's original contribution to the history of anaesthesia. Dr Richard Ellis, who addressed the BSHP Annual Conference in April 1991 on the subject of William Morton's discovery, was a leading campaigner for the commemorative plaque. In March 1992, he proposes to bring Robinson to the attention of medical historians at the International Symposium on the History of Anaesthesia to be held in Atlanta, Georgia.

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Introduction to Pharmacy.

E.M. and A.F. Jervis.

(One of the most constant attenders of our Spring Conferences is Mrs E.M. Jervis of Slough who is now in her mid-eighties. After some urging on our part, she and her son Alan have sent us an account of her early days in pharmacy.)

Maudie Jervis attributes her first interest in pharmacy to her father,Samuel Bartol Bratley, who was chief chemist for over twenty years to Messrs. John Richardson & Sons, manufacturing chemists in Leicester. As a girl, she used to visit him in the laboratory and became fascinated by the work, so much so that her father decided to approach a friend of his, Herbert Densham, who had a pharmacy in King Richard's Road,Leicester, to see if he would take her as an apprentice.

"I enjoyed the work and the customers although I was scared stiff with the people, but that soon wore off." Mr Densham had another pharmacy in High Cross Street, and there Maudie was sent to do a stint. "I found it very rewarding. First of all it was in the very poor part of Leicester, the customers used to come in for two old pennies worth of an article, and they like to chat to me." Counselling is nothing new for pharmacists. Frequently the customers came in with their wants scribbled on scraps of paper. Some of these Mrs Jervis has retained over the years and here are a few examples:

"2d. surrup of Squirrels; 3 Penny Worth Bitters of Allum; Dr Blossers smooks 1s.6d.; Icky Picky Anna Wine (with) Syrups of quills and delou"; Ecepanyacka; 3 Penny worth of Ukirliptous and mustard Oils for Rubbing Purpos"

A well-attuned ear is needed to translate some of these but as Maudie writes, "They are amusing, but I have never made fun of these people, because they were honest and doing their best and very friendly."

The High Cross Pharmacy was one of the oldest in Leicester having been established in 1836 by a Christopher Pickering, who was followed by his son Henry. It was rumoured that Henry always kept a skull on the counter, and he certainly had a brisk line in tooth extraction. Apprenticeship finished and qualification attained in 1930, Mrs Jervis stayed on with Mrs Densham until she married. Her husband was not a pharmacist but was, so to speak, chemically related as he worked in the laboratories of ICI.

But to return to Samuel Bratley, the instigator of this pharmaceutical enthusiasm. He was born in May 1877 at 33, The Market Place, Boston, of a local family. His mother was a nurse and his father, William Bemrose Bratley the manager of the savings bank, who died comparitively young. Samuel soon developed an interest in chemistry and won himself a place at the Royal College of Science, but the family's straitened circumstances did not allow him to take it up. Nothing daunted he became an apprentice from 1895 to 1898 to a bakery chemist, a William Jago of Hove.

For a short while he became an assistant lecturer under Dr M.C.Clutterbuck at Brighton School of Science and Technology, then in the early years of this century he moved to the perfume manufacturers, Messrs. Horner & Sons of Bethnal Green, London. There in July 1905, he married Edith Maud Deason of Leyton, and Maudie was born the following year at Romford.

When the baby was only a few months old, in 1907 the family moved to Leicester where Samuel joined John Richardson's then situated in Friar Lane. J.R.'s, as the firm was familiarly known, started as a modest retail druggist's shop in the main street of Leicester in 1793, but in the 1860s the rapidly developing wholesale and manufacturing side under J.G.F. Richardson, Ph.C.,broke away to form a separate business. In the mid-1920s, J.R.'s moved to new purpose-built works in in Evington Valley Road. Well known for their pills and tablets, they took a particular pride in the quality of their bismuth salts and Ferri et Ammon.Cit.

In 1913 Samuel Bratley was elected a Fellow of the Chemical Society, and about 1930 became analyst to the Co-operative Model Diary in Glenfield Road where he had the challenge and satisfaction of designing his own laboratory. Always a busy man, he took part in the Adult School movement and lectured at Leicester Museum on nutrition, a subject which is very news-worthy these days. At the same time he built up a consultancy practice where he tested well water, the milk of the Leicestershire Dairymen's Association, and the effluents from the sewage farm; public health work was important to him. Animals which were suspected of having died of poisoning were brought to him for post mortems. After his retirement, he continued his consultancy work for a number of years.

He died in 1965, only five weeks after his wife, aged nearly 88. Samuel Bratley's career harks back to the days when chemistry was a broadly based discipline and was not subjected to, what some think today, is over-specialisation.

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The Pharmaceutical Industry: the true perspective.

K.Holland.

In 1730 London's Plough Court Pharmacy listed among its stock earthworms, woodlice, the slough of a snake, animal dung, the fat of a man, horn of unicorn and moss growing on a human skull!(1) Oliver Wendell Holmes in 1860 wrote, "I firmly believe that if the whole materia medica, as now used, could be sunk to the bottom of the sea it would be all the better for mankind – and all the worse for the fishes."(2) Still, out of all this empirical philosophy some useful medicines emerged. Opium from Persia, ipecachuana from South America, cinchona bark from Peru, coca leaves from Columbia, nux vomica seeds from India and belladonna and foxglove from our own countryside.

Preparing these herbs as medicines required skill and time of which many chemists and apothecaries had little to spare. A few started to make galenicals and put up small packs of pharmaceutical chemicals for others to dispense. The latter were purchased in bulk from drysalters who imported or prepared chemicals in their workrooms, including soda, lime, nitre, sulphur, acids, alkalis, and various salts. The spicers imported medicinal herbs such as senna together with turmeric, ginger, cinnamon and cloves used in the preparation of food. The heavy chemical industry developed from drysalter firms who latterly took to selling their wares to the new manufacturers and wholesalers of medicines.

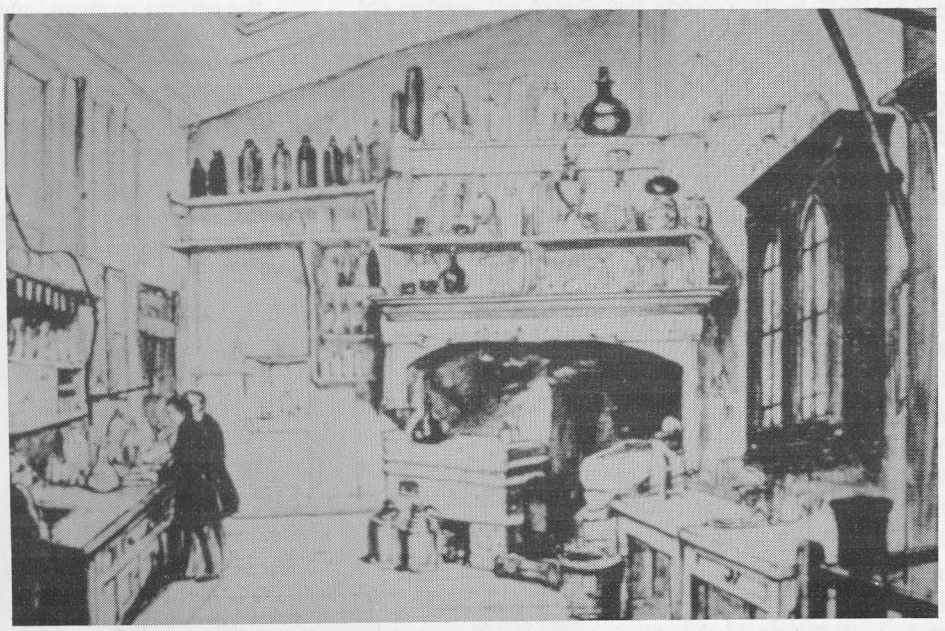
The names of many of these early distributors of medicinal products live on today. Allen & Hanburys, Evans, Macarthys, Ransomes and Duncan & Flockhart all started life in retail pharmacies during the eighteenth and nineteenth centuries. Most foreign pharmaceutical firms developed similarly and, like some British companies, established international subsidiaries.

It used to be thought that chemicals derived from animals or plants were "made by God" and so could not be synthesised by man as could those derived from air, water and minerals. Thus the former were called organic and the latter inorganic chemicals. In 1836 the German chemist, Friedrich Woehler, synthesised urea from ammonium cyanate thus transforming a chemical previously considered inorganic into an indisputably organic substance. Chemists everywhere began to attempt the synthesis of chemicals previously derived only from plants and animals.

In 1856 the eighten year old son of a British builder, William Henry Perkin, was studying at the Royal College of Chemistry under the tutelage of the German chemist August Wilhelm Hoffman. Working in a small laboratory at his father's home he spent his spare time trying to synthesise quinine. He was not successful but accidentally produced the first synthetic dyestuff which he called Mauveine. (Later also known as anilin black or blue.) This discovery led to a search for new synthetics by Friedrich Bayer who extracted natural dyestuff in Germany, as also did the two Swiss logwood extractors, Geigy and CIBA. In England at the age of 21, William Perkin using money provided by his father went into partnership with his brother, Thomas Bix Perkin, to undertake the business of making the new synthetics.

William Perkin was later granted honours in many countries, not least in Britain where he was knighted in 1887. His business, however, did not grow with the rapidity enjoyed by those in Germany and Switzerland who quickly took up Perkin's discovery to look for new and better synthetics with a wider range of colour shades to replace the somewhat evanescent natural products. Financial support for Perkin's company seems to have been less than enthusiastic, possibly due to the City's interest in indigo production from Indigo tinctoria plants grown on a large sale in India. There was also the attitude to fight that gentlemen should only indulge in chemistry as a hobby.

In spite of the City's tardy support, Sir William Perkin's



Plough Court analytical laboratory in mid – 19th century

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company prospered and in 1907 was bought by Brook,Simpson & Spiller,subsequently becoming the Alizarine Company which manufactured dyestuffs at Trafford Park. Renamed the British Dyestuffs Corporation in 1926, it merged with Nobel Explosives, Brunner Mond and United Alkali to form Imperial Chemical Industries. This giant merger was necessary to challenge the dominant position secured by the continental companies, in particular that of Bayer's IG Farbenindustrie whose exports were said to have provided a large part of the foreign currency for Hitler's Wehrmacht.

The First Synthetics.

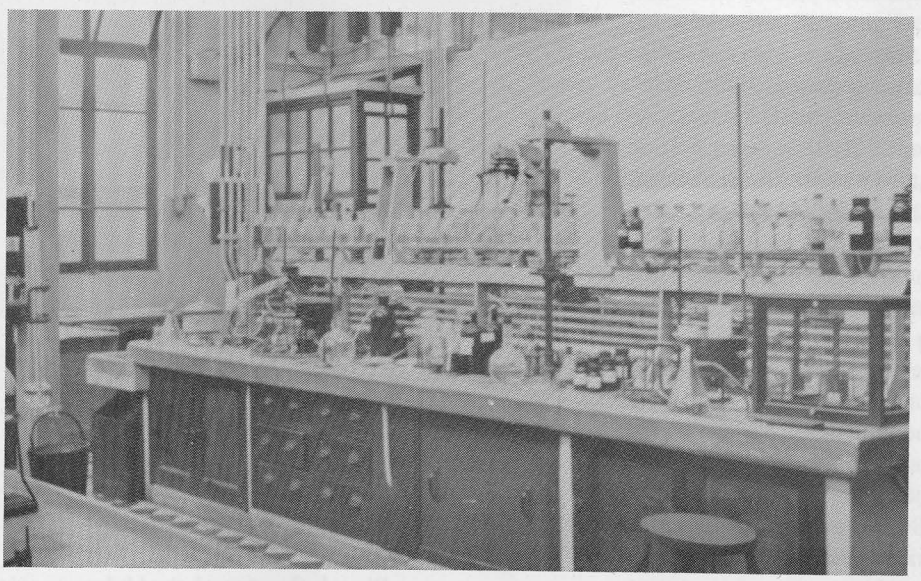
It was back in 1888 that the Friedrich Bayer company formed its ''Pharmaceutical Department'' to market the first ever synthetic drug, Phenacetin, discovered by their chemist Carl Duisberg. The introduction in 1889 of Aspirin following its synthesis by the young Bayer chemist, Dr Felix Hoffman, confirmed Bayer's pre-eminence in synthetic chemicals which continued until the start of World War I. After that war ended, the name ''aspirin'' became common property in Britain. In America, however, Sterling Products purchased the American interests from the United States Custodian of Enemy Properties in 1918, consequently the name ''Bayer'' is still used by them and ''Aspirin'' remains their trade mark.

The practical knowledge of organic chemistry gained by German chemical companies while researching and manufacturing these synthetics provided the expertise to produce and market Ehrlich's new anti-syphilic drug. Known as Salvarsan, Paul Ehrlich made his discovery in 1910 after synthesising and discarding another 605 related organic arsenicals.(3) In 1936 Bayer introduced Prontosil, the first of the sulpha drugs, which had been discovered by the head of their Institute of Experimental Pathology and Bacteriology, Gerhard Domagk. Dealing effectively with that streptococcus which infected women after childbirth, causing puerperal fever, it ended an all too common tragedy. Domagk, in 1939, was awarded a well earned Nobel prize but was not permitted by Hitler to go to Sweden. He finally collected his medal from King Gustav in 1947.

If it is accepted that the interwar years mark the adolescence of the pharmaceutical industry,it must be conceded that it was a productive teenager. On 11th. January 1922, Banting and Best injected their pancreatic extract into a fourteen year old boy adjudged terminally ill from *diabetes mellitus* with results that marked a historic breakthrough. George Henry Clowes, an English immigrant to the United States and a biochemist with Eli Lilly, met an old friend, Professor John J.R.Macleod of Toronto University, who told him of Banting and Best's success. Clowes promptly offered his firm's backing in both financial and production terms. By the middle of 1923 the company succeeded in mass producing insulin in marketable quantities. (4)

The 1920s and 1930s also saw the widespread availability of vitamins, notably pioneered in this country by Glaxo's young pharmacist Harry (later Sir Harry) Jephcott. In 1928 Lilly prepared the first palatable liver extract to make life possible for those with pernicious anaemia. Subsequently, in 1948, a Glaxo team working under Dr E.Lester Smith, after ten years research isolated Vitamin B12 from liver. This discovery led to the commercial production of cyanocobalamin by deep fermentation at Glaxo, so consigning liver extract to a page in pharmaceutical history.

The introduction of Prontosil led to a worldwide search for anti-bacterial substances which produced a number of successful products such as sulphamerazine, sulphadimidine, sulphathalazole etc. The first of these was sulphapyridine produced at May & Baker and marketed as M.& B. 693. It was synthesised by Dr M.A.Phillips in their Dagenham, Essex laboratories. This sulpha drug provided an effective treatment for gonorrhoea, an important consideration in wartime, and proved effective against the pneumococcus, then a common cause of death. It was widely acclaimed, not least by Churchill who, suffering pneumonia at the height of the last war, probably owed his life to ''...this admirable M.& B. from which I did not suffer any inconvenience, was used at the earliest moment, and after a week's fever the intruders were repulsed.'' (5)



M & B laboratory where sulphapyridine was discovered

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Medical Research Council
War Memorandum No. 10

Second Edition

THE MEDICAL USE OF SULPHONAMIDES

By Various Authors

(Edited by F. Hawking and F. H. K. Green)

LONDON: HIS MAJESTY'S STATIONERY OFFICE
1945
Price 1s. 3d. net

Penicillin made its medical debut during the war. This still prescribed pharmaceutical and later antibiotics, all derived from fungi or micro-organisms, have the ability to destroy specific infecting organisms without harming their hosts, or at worst causing far less damage than the infection.

During the interwar years, so called "patent medicines" were sold in huge quantities in every type of shop. Although retail pharmacy fought back with schemes like the NPU sponsored "Chemists' Friends"(supported by the justly described "ethical companies" such as Allen & Hanburys and Parke Davis) a veritable torrent of pills and potions poured down the throats of those brainwashed by popular advertising that was at times positively dishonest. They were not, in general, particularly useful products and one or two, such as a certain "teething powder" containing mercurous chloride were dangerous.

At that time there was much concern with the functioning of the bowels. Constipation was firmly believed by many to be the cause of most diseases, and the sale of laxatives provided large profits for the patent medicine makers. Phenolphthalein, liquid paraffin, aloes and senna were among the least dangerous medicines regularly bought by men and women who often forced them down the throats of their reluctant offspring.

With hindsight it is easy to condemn these nostrum makers but the majority of prescribed medicines of the period were scarcely more efficacious. Three benefits accrued to future generations from these OTC medicines - the development of the technology needed to mass produce packed dosage forms, the laboratories which were set up to comply with pharmacopoeial and other standards, and last, but not least, the accumulation of large amounts of capital.

Modern innovative pharmaceutical companies trace their origin from a variety of sources. These include, retail pharmacies (Evans, Kerfoot, Macarthys. Merck, Smith Kline & French, Allen & Hanburys, Duncan Flockhart and Boots), medical men (Squibb and Roussell), patent medicine companies (Beecham, Approved Prescription Services and Winthrop-Stearn), and the dystuff and heavy chemical industries (CIBA, Geigy, Bayer and ICI). Glaxo was founded to supply milk powder made from New Zealand's milk surplus, Eli Lilly was set up as a maker of galenicals "for the trade" by an American Civil War colonel, and Burroughs Wellcome was founded in England by American emigre pharmacists to make the new compressed drug forms they dubbed "Tabloids".

Dr Edward Robinson Squibb, the American who started the company which still bears his name, is an interesting pharmaceutical pioneer. As an United States naval surgeon he became incensed by the poor quality, and sometimes, gross adulteration or substitution of the drugs bought by the Navy for ships and hospitals. A certain Dr Edwards memorialised Congress in these words, "The United States has become the grand mart and receptacle of all the refuse merchandise ... from European warehouses and the whole Eastern World." Dr Huston of Jefferson Medical College agreed. He however noted that "...domestic practitioners of adulteration were reaching a very high degree of skill, almost the equal of European and Oriental falsifiers." (6)

In 1850 Dr Squibb received his first chance to improve drug purity when the Navy gave him permission to start a pharmaceutical laboratory at the Brooklyn Naval Hospital. First he set up a drug testing facility to monitor samples and consignments supplied by contending contractors. He began also to prepare galenicals and chemicals for naval use, usually with considerable financial advantage to the Navy Yard. Most important of these products was ether which he made in an apparatus of his own devising to provide a product of reliably anaesthetic quality. In December 1857 he resigned his commission in order to set up a civilian pharmaceutical manufacturing and wholesale drug firm. Later he was to serve on the United States Pharmacopoeia Revision Committee where he fought for the improvement of drug standards. In 1906, six years after his death, and due in no small measure to his campaigning, the Pure Food and Drugs

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Act was passed into law.(7)

It was in 1845 that Duncan Flockhart's prepared that other successful anaesthetic, chloroform, which they supplied to James Young Simpson and so helped to make medical history. In 1963, Duncan Flockhart, previously merged with T.H.Smith and J.F.Macfarlan & Co., became part of the giant Glaxo group.

The Antibiotics.

Fleming's observation of the effect of *penicillin notatum.* accidentally contaminating a petri dish on which staphylococci were being cultured, led to the discovery of penicillin. The war accelerated interest in its use since the orange organism was the bane of military and plastic surgeons when treating wounds and burns. Syphilis was another consideration very much in the minds of service medical officers.

Medical Research Council
War Memorandum No. 12

THE USE OF PENICILLIN IN TREATING WAR WOUNDS

(Instructions prepared by the Penicillin Clinical Trials Committee)

LONDON
PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE
To be purchased directly from H.M. STATIONERY OFFICE at the following addresses
York House, Kingsway, London, W.C.2 ; 13a Castle Street, Edinburgh 2 ;
39-41 King Street, Manchester 2 ; 1 St. Andrew's Crescent, Cardiff ;
80 Chichester Street, Belfast
or through any bookseller
1944
(reprinted 1945)
Price 3d. net

Penicillin production was carried out in culture bottles in England, notably by Allen & Hanburys at Ware, resulting in a substance resembling brown toffee. Product development capacity was restricted in war-torn Britain so Florey and Chain went to the USA and talked to, amongst others, Bristol Myers, Squibb, Lilly, Merck and Pfizer. The first effective production of penicillin by deep fermentation was thus developed in the States, principally by Pfizer. Not until after the war was it produced in quantity in the country of its birth by Glaxo, Distillers Company and ICI.

It was the American microbiologist, Selman Abraham Waksman, coiner of the word "antibiotic", who can claim a major share in the defeat of tuberculosis which during 1949 claimed nearly 20,000 lives in Britain, or 4% of total deaths. The antibiotic streptomycin which he discovered in 1943, taken together with isoniazid and PAS, cured most cases within six months of home treatment. The introduction of BCG vaccine by the French microbiologists, Albert Calmette and Camille Guerin, led to the virtual banishment of the disease from most Western countries.

Waksman had his workers culture, extract, titrate and make toxicological studies of the thousands of micro-organisms and plants sent to his laboratory from worldwide sources. Subsequently pharmaceutical companies carried similar experiments in the States which resulted in the discovery of such antibiotics as the tetracyclines and erythromycin. It was perhaps the earliest example of the "blanket" research which is particularly suited to industrial laboratories.

The first fifteen post war years saw the arrival of new pharmaceuticals by the hundred so making improvements in the treatment of diseases at an unprecedented speed. In addition to anti-infectives, the industry introduced the antihistamines and produced more effective anthelmintics, anaesthetics, antimalarials and analgesics, while new therapeutic concepts led to the invention of anti-depressants, anti-convulsants and anti-mitotics. This period also saw the replacement of barbiturates by the diazepines which, although they proved to be addictive, at least reduced the horrific number of deaths caused by barbiturates. A number of natural and synthetic hormones were introduced at this time, and then the contraceptive "pills" which were to have such a profound effect, not only on population growth, but in changing moral attitudes. The newspapers repeatedly headlined the arrival of "new wonder drugs" to banish all man's ills. The Pharmaceutical Industry was popular !

This popularity did not last long. The National Health monopsony was dedicated to reducing costs in an undertaking consuming ever more of the nation's budget as new technologies produced better and more expensive surgery, apparatus and drugs which, by their very success, increased life span and thus the number of potential patients. Vested interests in most of the developed countries similar had problems, and they all looked to the one group that seemed the easiest to attack, the medicine makers.

In spite of the rumblings of "anti-pill maker " attitudes the pharmaceutical industry continued to thrive. It could now afford well equipped research laboratories and the

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employment of thousands of physicians, pharmacists, chemists, physicists, biochemists, microbiologists, biologists etc. Research and development departments worked closely with universities and hospitals in innovating and making medicines. Then, on a fateful day in the early 1960s, disaster struck, a disaster summed up in one word, – Thalidomide !

Post–Thalidomide.

Discovered in 1953 in West Germany, it was introduced in 1957 as a non–barbiturate hypnotic. It was most successful in controlling the severe depression sometimes associated with early pregnancy. It was marketed in Britain by the Distillers Company in 1958. By 1960 it was noticed that the number of babies born with ill–formed or non–existent limbs was much greater where the mothers had been treated with Thalidomide. This observation was made possible by medical statisticians using an invaluable new tool, the digital computer; the same tool that Doll and Hill had used to link lung cancer and cigarette smoking.

Reaction to the Thalidomide disaster was prompt and far reaching. In the States, the Food and Drug Administration Director, Canadian born Dr Oldham Kelsey had been worried about reports of peripheral neuropathy occurring in some Thalidomide treated patients, and had blocked the grant of a USA licence. When news of the tragedy broke she became a national heroine overnight. The fact that America's FDA had not permitted its use persuaded other governments to inaugurate similar controls. In Britain a Select Committee, under the chairmanship of Lord Sainsbury, recommended the introduction of new legislation.

A Medicines Commission was set up with wide powers. It established a licensing body (now the Medicines Control Agency) to control the quality, clinical trial, labelling and marketing of medicines and the conditions for which they can be recommended, as well as an inspectorate empowered to visit at any time all premises where medicines are made or stored.It demanded the highest standards for production, quality control and subsequent storage. Perhaps most crucial was the Commission's decision whether ''the premises were suitable''.

Brockham Park, Surrey, where Beechams did development work on the penicillin nucleus.

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The new arrangements were a mixed blessing. The risks from the introduction of new medicines and the purity of all drugs were certainly better controlled, but ever more expensive equipment, improvemment of premises and the increasingly stringent tests and trials of all pharmaceuticals, although initially charged to the industry, was inevitably passed on to the consumer. Furthermore, the increasing period between patent application and product launch decreased the time in which research and development costs could be recovered.

There is a feeling in present day society that it is wrong to make money from illness. This is a purely emotional response which does not stand up to reasoned argument. People do not object to their doctors being paid (though they prefer not to be the paymaster themselves) but are convinced that the pharmaceutical industry is grossly profiteering. The world's politicians well aware of these feelings, can and do,blame the industry for the high cost of medical care. Some call for nationalisation believing it to improve research and reduce product costs. The results of such a policy for the last 72 years in Eastern Europe do not bear this out.

The fact is that for most of the time that the pharmaceutical industry has been concerned with the innovation of new medicines it has also had to deal with a virtual monopsony which strongly questions its financial conditions. Costs of research have grown far ahead of inflation whilst the period of time during which successful discoveries reach profitable markets is proportionately reduced. So prices are increased in order to recover R.& D. costs.

The growing cost of R.& D. resulting from our increasing knowledge of molecular biology in relation to disease and health, computerised molecular imaging and new analytical tools underlines the risks of being forestalled by a competitor. Boards of directors have cause to consider the necessity for a large capital base.

This sort of development was foreseen over thirty years ago by the pharmacists, Harry Jephcott of Glaxo, John Capel Hanbury and Cyril Maplethorpe of Allen & Hanburys. They merged their companies in 1958 and proceeded to take over Evans Medical and Edinburgh Pharmaceutical Industries in 1963, followed by British Drug Houses in 1967. This last merger also brought the pharmaceutical distributors, Vestric. The world wide success of the compnay has proved the commercial correctness of these moves. The recent mergers of Squibb with Bristol Myers, and of Beecham with Smith Kline & French underline this "big is necessary to survive" philosophy.

The industry is international in both the way it operates and in the outlook of its managers. Every company has developed subsidiaries in other countries which act as marketing instruments and distributors of finished products, and others carry out secondary manufacture. In yet others, research centres are established with a director who reports directly to the home head of research. The world view of our own country being a fertile source of graduates, technicians and managers for the pharmaceutical industry is confirmed by the number of foreign companies that have set up here complete manufacturing plants and invested in research establishments. Our country's history of medical and pharmaceutical innovation backs their judgement – Harvey, Sydenham, Jenner, Simpson and Lister spring readily to mind, followed by Fleming, Florey and Chain in this century.

A number of foreign pharmaceutical companies established their first overseas subsidiary in this country. Parke Davis, Lilly, CIBA, Roche and Rhone Poulenc were all carrying out manufacture and some research in Britain before World War II. A booming pharmaceutical market afterwards brought more companies to Britain, not only to get their share of National Health Service money but to use the country as a base for export to Africa and the Middle East. Not least in their calculations was the availability of those scientific and medical skills not always advantageously exploited by ourselves.

During the 1950s our own indigenous firms were also growing and becoming big businesses, the Glaxo Group, for example, became a favourite of Stock Exchange investors. Burroughs Wellcome provided the Wellcome Foundation with research funds far beyond pre-war expectations. Beecham used its patent medicines and toiletry generated cash to invest heavily in the development of synthetics derived from work on the penicillin nucleus. Imperial Chemical Industries began to realise the potential of its medicines capability and released this operation from Dyestuff Division tutelage to answer directly to the main board as ICI Pharmaceutical Division.

The new legislation introduced in many countries following the Thalidomide disaster led to much discussion between the companies and health departments. In Britain, the Association of British Pharmaceutical Industry became increasingly involved in negotiations with Health Ministers and their civil servants.

The Association of British Pharmaceutical Industry.

Trade associations are different from professional bodies in as much that members are not individuals but companies who nominate employees to serve on the committees. The ABPI evolved from the Wholesale Drug Trade Association which, in its turn, was formed by a merger of the Drug Club and the Chemists' Supply Association in 1930.(8)

One of the important functions of all trade associations is to promote the interests of its members by influencing public opinion. Pharmaceutical executives have long believed that innovation could lower the cost of illness by enabling

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patients to avoid expensive surgery and reduce hospitalisation. The ABPI Board of Management of 1962 set up The Office of Health Economics (OHE) with George Teeling Smith, pharmacist and economist, as its first director. Since then well researched and well presented publications have been issued drawing attention to the cost effectiveness of alternative forms of treatment in chronic and acute diseases. The OHE has now largely broken away from its founder to become an independent institution enjoying the respect of government, health professions and academics alike. In 1980 London University elected Mr Teeling Smith a Visiting Professor.

During its early days the ABPI was dominated by ''drug houses'' and wholesalers while the new innovating companies were accommodated as one of its four divisions. It soon became obvious that this Branded Medicines Division was fast becoming the most important branch. The last president from the ranks of what we now call the generic companies was Dr Tom Kerfoot.(9)

In the 1960s a number of the earlier patents expired and under their pharmacopoeial name could now be marketed by any company which showed the Medicines Licensing body that they were able to make it satisfactorily. Evolved mainly from the older ''drug houses'' the ''generic'' makers flourished. Thomas Kerfoot, APS, Macarthys Laboratories, Evans Medical, Cox of Barnstaple and Charnwood Pharmaceuticals (CP) all began to make and sell ''generics'' with the enthusiastic encouragement of the Department of Health. Other companies were set up to import generic dosage forms from overseas to pack and market them under an ''Assembler'' licence.

Only one company, William Ransome & Son, in this country continues to make the older botanically based materia medica. It is probably the last of the manufacturers of tinctures, infusions and extracts in Britain still with a member of the founding family at its helm; it became a stock exchange quoted company in 1987.

Drug Innovation.

Until the middle of this century the rationale of drug innovation was based either on attempts to modify naturally occurring substances of known pharmacology or the observed effect of chemicals on in vitro bacterial cultures. ''Serendipity'' or the observation of therapeutically useful side effects also occurred as is well illustrated by the case of iproniazide. Developed by Bayer AG as a tuberculostatic, it was noticed that the patients became highly excitable. Later it found its place as an anti-depressant. Work on related compounds by both Bayer and Squibb led to the discovery of isoniazide a tuberculostatic without this side effect. Isoniazide had been synthesised in 1911 as a ''chemical curiosity'' and was therefore unpatentable.

A more directed search for new medicines has been made possible by a better understanding of cell chemistry. The realisation that the proteins forming cell surfaces act as ''receptors'' for specific chemical ''tags'' has led to some notable successes in drug design. James Black, working with ICI, was responsible for the introduction of the beta-blocker, Inderal (propanolol) which provided a revolutionary new treatment for hypertension. At a later

Modern production line at Smith Kline Beecham factory in Worthing

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date, working at Smith Kline & French's English research establishment,he developed the H2-blocker, Tagamet (cimetidine), and thus was responsible for a dramatic decrease in gastric and duodenal surgery. Knighted by the Queen, Sir James was awarded a Nobel prize for medicine.

A new H2-blocker was developed at Glaxo Laboratories which, in financial terms, is the most successful drug ever sold. It has brought most acceptable foreign currency to Britain and like its predecessor, Zantac (ranitidine) emphasises the importance of British research. It is particularly pleasurable to note that the team which developed Zantac was led by two pharmacists, David Jack and Roy Britain. In November 1990 Dr Britain was able to give a televised report on Allen & Hanbury's new asthma treatment,Serevent or salmeterol.

An academic pharmacist who can claim the rare achievement of discovering and introducing a pharmaceutical invention which has enabled surgeons to perform previously impossible operations and rendered other procedures less unpleasant, must be mentioned. The muscle relaxant atracurium besylate was invented by Professor John Stenlake and developed for the market by Wellcome Research Laboratories under their brand name of Tracrium.

Most inventions are patented not long before they are sold, so enjoying most of the allowed twenty years protection, but pharmaceuticals patented immediately after synthesis are still a long way from the market place. In the years up to the mid-century the time between issue of the patent and its market launch was reasonably short; M.& B. 693 was synthesised on 2nd. November 1937 and was marketed towards the end of 1938. With the passing of the years the interval between patenting and marketing has steadily lengthened. At present the average investment required to introduce a new medicine is about £100 million with a patent protected market time from only six to ten years. It is hoped that in Europe at least that patent protection to new pharmaceuticals will be extended to at least fifteen years from the date of the grant of the product licence.

To market their goods to best advantage, pharmaceutical companies use medical representation, journal advertising, mailed literature and video presentations to groups of doctors. To a lesser extent they use the same techniques to inform our own profession. People employed in this work are human and, therefore, fallible so it would be surprising if some were not guilty of exaggeration or excessive hospitality. When such transgression come to light, complaints may be referred to the ABPI's Code of Advertising Practice Committee. Sir Joseph Maloney, QC, was appointed in 1968 as a "neutral" chairman. During the ten years he occupied the chair, and since, under Phillip Cox, DSC,QC, hundreds of complaints have been examined. The code, often revised, is heeded by most members; breaches are usually committed when someone new to marketing is unaware of or misconstrues its provisions.

A criticism often levelled at self-policed trade organisations is that removal of membership is the maximum penalty they can apply. This option has been exercised on at least one occasion during recent years, but the offender subsequently re-joined. It would seem that unless the NHS refuses to pay for products supplied by non-ABPI companies then this option is ineffective.

As recent events in the USSR have shown, distribution is an important consideration. Pharmaceutical wholesalers in Britain can not be faulted in this respect. They provide a first rate prescription product service at minimum cost. The frequency of deliveries is often criticised but if run at a lesser rate escalating stock levels, possibly outdated, would occur. Although always regarded as an integral part of the pharmaceutical industry, wholesalers broke away from the ABPI during the mid-1960s to form the Association of Pharmaceutical Distributors.

It is puzzling why the control of most medicines in Britain when stored in relatively small amounts is vested only in the hands of pharmacists, doctors, dentists or veterinary surgeons, yet the large amounts of the same products stored in the warehouses of manufacturers and wholesalers may be controlled by anybody. It is true that all these firms must be licensed by the Medicines Authority but only to ensure proper storage conditions and not who receives them.

The pharmaceutical industry is international, efficient, successful and big business. As such it is the object of criticism and the target for the ill-informed or jealous. It is also statute controlled and financially accountable with a high risk factor only equalled by the entertainment industry. Whereas the top earning employees of the latter take home millions the high flyers of the industry enjoy salaries which are small by comparison. Pharmacists always did, and still do, play a major role in the industry's research teams.Some are employed as pharmacologists, one or two as molecular biologists, while many work in and manage laboratories devoted to pharmaceutical formulation. At least one, Jane Nicholson, member of the Society's council, is responsible for the preparation of licence applications.

Pharmacists are also employed as managers, publicists and marketeers, and are still to be found, here and there, at the top of companies operating in Britain. However, if this is to continue then more must come in at the bottom as medical detailists, information officers, production executives, quality controllers or as members of R.& D.teams. Pharmacists have the right training for many of the vital functions of this industry. Unless our members seek employment with British companies or foreign subsidiaries established here,the mantles of Arthur Chamings, David Jack, Harry Jephcott, Roy Britain, Cyril Maplethorpe, Thomas Kerfoot, William Ransome and Henry Wellcome and other outstanding pharmacist contributors to the industry will fall

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on the shoulders of the followers of other disciplines.

One feature of the British pharmaceutical industry which must strike everyone who comes into contact with it is the universally enthusiastic interest in the operation of their companies evinced by managers, researchers and line workers alike. They are proud of the comfort and healing which their products bring to the sick, and also of the contribution they make to the nation's balance of payments. If this latter success were equalled by the rest of British industry, Britain would be the richest country in the world.

Notes and References.

1. E.C.Cripps, *Plough Court,the story of a notable pharmacy,* London,1927, Allen & Hanburys. p.xvii.
2. O.W.Holmes, *The Professor at the breakfast table,* 1860.
3. First marketed by Hoechst of Frankfurt-am-Main. After 1939 May & Baker made Metarsenobillon and Novarsenobillon at Dagenham.
4. E.J.Kahn Jn., *All in a century,* Eli Lilly,1976,pp.94-103.
5. Winston Churchill, BBC broadcast, 1943. Although his recovery is popularly ascribed to M.& B.693 it is more likely that it was the less toxic M.& B.760 which was prescribed.
6. G. Blochman, *Doctor Squibb. The life and times of a rugged individualist,* New York, Simon & Schuster,1958. pp.63-4. Before becoming a naval surgeon, Squibb had served an apprenticeship in a Philadelphian pharmacy.
7. *Ibid.* pp.273-74.
8. The Drug Club was established in 1891 from an even earlier association formed in 1867 called "The London Wholesalers Drug and Chemical Protection Society".
9. Thomas Kerfoot, the founder of the company which bears his name, was born in 1840, studied pharmacy at Bloomsbury Square under Redwood, Attfield and Bentley, and No.710 on the first register. He died in 1936 aged 96.

Laudanum

K.D.Richardson

Mr A.F.Morson's account of pharmacy in the 1840s mentions opium as that "most important medicine" which became more popular as wages rose so that a little raw opium or laudanum could be afforded. This reminds me of, perhaps, a little known source on the uses of laudanum related in the October and November 1849 issues of the Morning Chronicle by Angus Bethune Reach a prolific journalist. The reports are from areas in Manchester where the textile industry flourished, and in particular, Ancoats, where the Victorian pressed-glass industry had its centre.

The ten hour working day had been in operation for about a year. Sanitary conditions were still to improve, there were many squalid cellar dwellings and the mills were hot, unventilated and dusty. There was drugging of young children whose mothers worked all day and reach gave an honest account.

In the 1840s mothers went back to work on the second or third week after confinement. The baby was left with the very young or the very old who looked after several babies, the old ladies often taking in washing as well. This led to the almost universal employment of narcotics to drug the child until it slept, and then too often, until it died. In one case quoted, the baby was nine weeks old; 48% of the deaths in Manchester being of children under five years of age.

The druggists' shops in these districts sold, "Baby's Mixture", "Mother's Quietness", "Child's Cordial", "Soothing Syrup" etc., all these lulling beverages being a sweetened preparation of laudanum. Such evidence was elicited from John Greg Harrison, one of the factory medical inspectors, who had a very large practice among the working classes. Laudanum was also used by the adult population as well as raw opium chewed as a stimulant. Habitual drunkards after giving up spirits went on to opium. Laudanum was sold in pennyworths.

Reach wrote that the most noted of the druggists were the "Godfrey Shops". Every druggist made his own Godfrey's Cordial, and the stronger it was the faster it was bought. It consisted of laudanum sweetened with a syrup and flavoured by some essential oil of spice; it usually contained one and a half ounces of laudanum to the quart. Dosage was a problem, half a teasponnful being perhaps prescribed by one druggist, whilst another's preparation could be stronger, and the mother unaware of this. "Infant Quietness" usually contained two ounces of laudanum to the quart.

One druggist remembered that when he was apprenticed in the 1820s in a country place principally inhabited by hand-loom weavers, his master used to make "Godfrey" in a large boiler by the twenty and thirty gallon batch. Home-made preparations, taught by the midwives, contained laudanum, aniseed, treacle and sugar. if the laudanum proved too expensive then crude opium was used.

Some druggists were concerned about this abuse, and one mixed his laudanum with Tincture of Gentian in the hope that it would do less harm.

Source. *Helmshore Local History Society Journal,* 1972.

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Health Service Prescription Stamps.

L.G.Matthews.

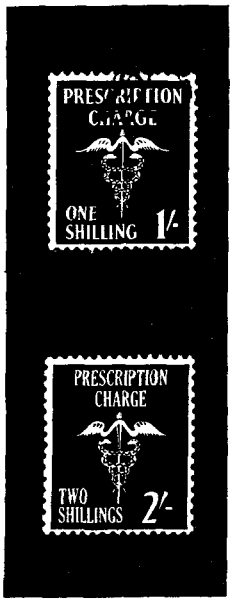
Before Aneurin Bevan plunged the whole nation into medical care under the N.H.S. Act of 1946, there had been in force the National Health Insurance (N.H.I.) Act of 1911 operative from 15 January 1913 offering medical advice and treatment to insured persons; the earnings limit being set at £160 a year.(1) The NHI had been pioneered by Lloyd George, who on his visit to Germany to investigate how the medical and dispensing aspects were organised, took with him the pharmacist William (later Sir) Glynn Jones. There was provision for voluntary entrance into the scheme.

Patients who visited hospitals and received medicines had to pay a fee of 6d.; the payment was either in cash or denoted by a stamp affixed to the prescription card. The stamp was yellow in colour, But some hospitals, like the Royal Free in London, had their own for a time.

The NHS was launched in July 1948 but only sixteen months later, owing it was said to prescription abuse, Attlee's government announced that it proposed to make a charge per prescription (that is on each form but not each item) of not more than one shilling. Bevan was totally opposed to this as it was counter to his FREE NHS principles. Nevertheless the enabling proposals were introduced into the House.(2) In the event the Labour government never implemented these proposals and it was left for the Conservatives to do so after they took office in October 1951. Hospital in-patients and those in receipt of National Assistance were exempt; further exemptions were to follow.

As costs rose so did the price paid, rising from 1s. (5p) to 2s.(10p) in 1959. For the out-patients, hospitals issued stamps which bore the words, Prescription Charge, and the amount together with the Aesculapian emblem.

One shilling stamps were blue and the two shilling red, for a short time there was introduced a half crown (2s.6d.) stamp which was turquoise but they were soon withdrawn.



A Minister of Health, in a written reply to a questioner in the Commons about prescription charges, reported that, "Before July 1979 the level of charge was 20 pence, on 16 July 1979 45 pence, in April 1980 it became 70 pence ... and so on to April 1984 when it became 160 pence." Today, as we know, it will shortly be £3 75p.

These prescription stamps are now rarely available though dealers get them occasionally. The stamps are a forgotten class as far as "real" philatelists are concerned, but the older generation will recall their introduction with interest.

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2. *Pharm.J.*, 5 November 1949; 9 February 1952, p.87.

The specimens shown in the photographs were kindly supplied by Dr Edith Gilchrist, FFRACS, who with the late J.H.Hadgraft, B.Pharm.,FRPharmS.,supplied much of this information.

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The Leslie Matthews Medal.

Address made by the President Mr. W.A. Jackson.

"Twenty five years ago on 14th.June 1967, the inaugural meeting of the British Society of Pharmacy took place at 17, Bloomsbury Square. Tonight it is my privilege to ask you to join me in honouring one of those founder members.

Leslie Matthews is by any standards an exceptional man. A life member and Fellow of the Royal Pharmaceutical Society of Great Britain, he is also a barrister, a Fellow of the Royal Society of Medicine, a Fellow of the Society of Antiquaries, and a Liveryman of the Worshipful Company of Apothecaries. In addition he is a member of the International Academy for the History of Pharmacy, of French and Spanish societies for the history of pharmacy, and is an honorary member of both Italian societies and of the Benelux Society for the History of Pharmacy.

His intelligence combined with enormous energy and capacity for hard work stood him in good stead at Wellcome where he became Company Secretary and was appointed to a seat on the board of directors, with special responsibility for overseas companies. During his time there he had a consuming interest in pharmaceutical history, and on his retirement devoted his considerable talents to research in this field, resulting in the publication of ten books and innumerable papers and articles of consistently high quality. In 1968 he was awarded the Urdang Medal for distinguished writing on this subject by the American Institute for the History of Pharmacy, his books *The Royal Apothecaries* and *History of Pharmacy in Britain* being specially commended.

He was the first honorary treasurer of the BSHP, and its second president. I have here a copy of volume 1, number 1, of *The Pharmaceutical Historian* from 1967, and on page two is an article entitled, "The city of York's first Spicers, Grocers and Apothecaries" by Leslie Matthews. He has been a regular contributor ever since and the current issue contains an article on "Health Service Prescription Stamps" by him.

He has remained a modest man, prepared to help anybody who has a genuine interest in the subject. A connoisseur of good food and wine, he is excellent company having a fine sense of humour and a fund of interesting experiences on which to draw.

Leslie Matthews and Bill Jackson with the Medal on the balcony of the Royal Pharmaceutical Society's house.

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Tonight sees the presentation of a medal which we have commissioned to be awarded for distinction in the history of British pharmacy. There is nobody who has worked harder or who has achieved more in this field than you have Leslie, and I ask you to accept this, the first medal, named in your honour THE LESLIE MATTHEWS MEDAL''.

Mr. Mathews replied, ''President, Members and Friends. Few pharmacists have been honoured in the way the British Society for the History of Pharmacy has chosen to honour me by instituting this Medal, which will be a valued possession and which I hope will be equally valued by succeeding recipients. I can think of a number of pharmaceutical historians who blazed the way towards establishing a permanent interest in the subject. Amongst them let me instance Mrs Lothian Short, whose work in setting up the Pharmaceutical Socierty's collection can never be too highly praised.and James Grier whocontributed his book *History of Pharmacy* in 1937 at the request of the Society. It was in 1952, as I have recorded, that I was asked to chair the Pharmaceutical Society's History Committee, of which four members were of mature age, being over 80; Howard Bayles, Ernest Cripps, Saville Peck of Cambridge, whose knowledge of mortars was considerable, and James Fairlee of Lavender Hill who had gathered a store of drug jars and who knew a great deal about them. Bayles was a contributor to the *Chemist & Druggist* for about thirty years, in the days when that journal's annual special supplement was eagerly awaited, under the editorship of Owen Waller and, later, Arthur Wright. This supplement induced many to interest themselves in the history of our profession. I should mention too, the many articles that appeared in the *Pharmaceutical Journal* when Mr Fitch was editor. I can not omit Douglas Whittet, the only recent pharmacist to become Master of the Society of Apothecaries, and who published many historical articles in a wide field.

If my contributions have been varied, it is perhaps because I have been more interested in people and objects than in the philosophies behind some pharmaceutical developments. I have not been able lately to do the research necessary to supplement the 21 year period during which I have written about sales of medical and pharmaceutical materials and drug jars in the London auction rooms, which have appeared in the *Pharmaceutical Journal* since 1970.

I should like to quote from one of the Restoration playwrights, from Shadwell's *Bury Fair,* ''He found esteem from those he valued most'' – and that is the way in which I regard this honour from you all, and for which I am truly proud and grateful.''.

THE SPRING CONFERENCE, 1992.

The Spring Conference of the British Society for the History of Pharmacy took place in April at the Chimney House Hotel at Sandbach,Cheshire. On Friday, following afternoon tea at the hotel, members were the guests of the Wellcome Foundation at Crewe Hall. Dr D.E. Allen of the Wellcome Institute gave a paper on ''Herbal Medicine without the Herbals: a Parallel Tradition'', illustrated by slides, in which he compared the use of native herbal simples used in folk medicine with those found in published herbals. This was followed by a buffet, and a tour of the magnificent Crewe Hall.

On Saturday morning, Dr Annet Bierman gave us a review of the work and research on pharmaceutical history in the Low Countries, which was followed by Dr Juanita Burnby speaking about the antiquarian William Stukeley M.D.(Cantab.) and his friends, the apothecaries. The final paper, delivered by Dr W.E. Court concerned John Gerard, who was born in nearby Nantwich, and his ''Grete Herbal''.

The afternoon was occupied by a visit to the Salt Museum at Northwich. After dinner owing to a recalcitrant projector Mr Jackson's talk on Cheshire had to be cancelled, but due to some sterling work by Mr Anthony Morson, members were able to enjoy a good proportion of the slides on historic Dutch pharmacies presented by Dr Bierman.

On Sunday morning after the Annual General Meeting, Dr G.G.Benson, a Fellow of the Pharmacy Department of the University of Manchester, gave an illustrated paper on the origins and early history of the Manchester Pharmaceutical Association. He also brought along some artefacts and documents belonging to the Association which were examined with interest during the coffee break. The last paper of the Conference dealt with the origins and history of pharmaceutical wholesaling, and was given by Dr P.M.Worling, chairman of AAH Pharmaceuticals.

BSHP would like to thank the Wellcome Foundation for their generous hospitality which helped to make this Conference a success.

W.A.Jackson.

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vial because it was only the simple tincture, he examined it, whereupon he found, "... that it did not contain a particle of Myrrh, scarcely any Saffron and a very small portion of Spirit."(4)

The members of the Select Committee of the 1852 Pharmacy Bill and those they questioned all found standards distressingly low. John Savory said that he had the greatest difficulty in obtaining competent assistants. "I have lately been in want of two assistants, I have had forty or fifty applicants, and out of those I found very few who were acquainted with the rudiments of pharmacy or chemistry; they could hardly read a Latin prescription if it was anything out of the common way." He never took on any young man without giving him a far from searching examination, Many did not know that muriate of soda, sodium chloride and common salt were the same substance. He went on to assert that the assistants he had from all parts of the Continent, including Hungarians and a Turk, were superior in generality to the English assistants. James Arthur Wilson, M.D., senior physician to St. George's Hospital and a Censor of the Royal College of Physicians, in which capacity he had to inspect as he described it, "the medicines of the City of London". In practice this meant visiting both the open shops of the apothecaries and those of the chemists & druggists. In the course of the visitations, he and his colleagues had found Extract of Colocynth which was either black and very hard, or else soft and mouldy, in every shop but one, in others a widow woman dispensing with a baby in her arms, but, he added, the people who really frightened him were the youths who ran the shop and dispensary with all the misplaced self-confidence in the world.(5)

The truth of the matter was that, except for an enlightened few, the practice of pharmacy was not in any way taken seriously. Henrietta Cresswell when writing about her father John Cresswell (1818 - 1892), a general practitioner in Winchmore Hill, described his dispensary. "The one small stall of the stable had been adapted to the uses of a surgery. There was an old counter of dark mahogany, shelves of dusty bottles, and a row of drawers with mysterious glittering gold labels, Rad.Quass.,Cort.Aurant.,and Pet.(sic) Nit. etc. If you wanted a cork for a fishing float it must be stolen from "Subera", and in another drawer, labelled "Rad.Zingib." were some pewter "squirts" .... There were gallon jars of Castor Oil and Mist. Sennae Comp., and a chest of carpenter's tools, bins of physic bottle and vials, an old fashioned ewer and basin of white delft, and sundries of every kind, and over all and among everything the largest and thickest cobwebs ever seen. Nothing was allowed to be dusted for fear a bottle should be misplaced, or some other damage done. In summer a species of enormous brown moth abounded.... The window was extremely small and shrouded by a sweet-water grape Vine, so that the door usually stood open while the Doctor did his dispensing to give him some light."(6) Henrietta is referring to the years of the early 1860s.

Diverting slightly by jumping forward another fifty years, it can be seen that matters had improved but there was still much with which to find fault. The author writing of his father John Muriel (1859 - 1946), a G.P. in Hadleigh, Suffolk, relates that the dispensary had originally been a large pantry with all the walls lined with shelves which, "... contained an odd assortment of things from scales to measure out drams and minims, and mortars and pestles, and the stuffed head of an eagle his father had shot ... and his great aunts' dolls and a vast accumulation of papers of archaeological or ecclesiastic or scholastic interest." There was however no poisons cupboard, and at this the newly established Panel Committee [of the N.H.I.] took great exception. "The sight of strychnine and antimony and tartar emetic and hyoscine and morphia and many other poisons jostling ... with formalin tablets, cascara tablets,castor oil, syrup of figs and other less harmful agents of his trade" ... rendered the Committee speechless with horror. But the next morning, "a registered letter arrived informing him that unless he took immediate action and had a poison cupboard -which must be kept locked- made at once, he would be reported to the British Medical Council; and - who knows ? - his licence to practise taken away."(7)

After this somewhat depressing review of too much of the state of pharmacy, it is well to look at the other side of the picture.

The introduction of the new and far more potent drugs, such as aconite and hemlock in the second half of the 18th. century, and hydrocyanic acid in 1817 by Magendie, meant that dosage forms had to be more accurate, and the preparations themselves more uniform. All through the 18th. century the pill had been gradually replacing the bolus, and greater accuracy was being effected by use iof the graduated pill tile and the pill machine.(8)

The discovery and isolation of many alkaloids in the earlier years of the 19th. century meant that doctors were, or at least should, be able to tailor their prescribed dosages because the activity of known remedies could be ascertained and hopefully measured. Many still preferred the old galenicals but at the same time considerable effort was expended to improve and standardise liquid and solid tinctures and extracts. A notable person in this work was Richard Battley, an apothecary and surgeon turned pharmacist. The Censors of the College of Physicians spoke glowingly of his preparations whenever they visited him on one of their tours of inspection. On 9 June 1836 they wrote, "Visited his laboratory and found everything in excellent order", and the year before, "Everything at this Establishment beyond praise."(9) thermolability was beginning to be recognised. John Barry of Allen and Hanbury's noticed variation of efficacy with excess heat, and in 1819 introduced in vacuo

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evaporation. His method of using the condensation of steam in order to produce the vacuum was slow, consequently it was not widely used until the introduction of a pump for evacuation which speeded the process along considerably. Theophilus Redwood particularly advocated this method.(10)

Battley was an advocate of cold water infusions and was also well known for for his concentrated infusions of 1 part to 7, to which the Censors alluded more than once. Percolation had been known in Britain for many years but it was not until 1841 that Henry Deane of Clapham urged its use.(11) Deane was well known and highly respected in the pharmaceutical world. He was the nephew of Thomas Shillitoe, a chemist & druggist at Tottenham High Cross, but was apprenticed to Joseph fardon of Reading; his interest in chemistry had first been aroused when paying visits to the laboratory of his father's friend, John Gibson of Howard, Jewel and Gibson.

Labelling was another matter which was beginning to exercise pharmacists' minds. Although it had been very lukewarm at the time a Bill relating to poisons was introduced in 1819, not long afterwards the standing committee of London chemists & druggists circulated a warning to chemists concerning the care needed for labelling arsenic, oxalic acid and corrosive sublimate, and in any case should only be sold to responsible people.(12) Amazing as it seems to us, it was usual for drugs and chemicals to be sold without any identification, as witness a case reported in the *Annual Register* of November 1816 under the heading, ''Second Death by Oxalic Acid''.

Thomas Fage of Tower Hill and his wife were walking home on Saturday evening along Borough Road when he kicked a small parcel wrapped in blue paper and tied with string. His wife identified it as fine Epsom Salts, took it home and showed it to the lodger. Both men supposed her to have sufficient knowledge as she had lived in at an apothecary's practice before marriage, and did not remonstrate with her when she took a dose next morning. After her death, Fage distributed a bill whereupon two men came forward and gave evidence. On the Saturday, one of them had purchased Acid of Sugar in a very similar parcel at the shop of Mr Irish, a druggist in Blackman Street, in order to make a solution for cleaning boot tops. He had given it to his companion who lost it from his pocket so that they had to return to the same shop to replace the chemical.

The idea was then promoted that poisons should be stored quite separately from other drugs, distinctively labelled, and ideally, in bottles distinguishable by touch. The Dublin Pharmacopoeia of 1850 was the first official publication to introduce ribbed bottles for preparations for external use.

The problem of Adulteration

A great problem which beset both pharmacy and the food industry was that of adulteration. Frederick Accum, a German pharmacist who worked in the famous Brande pharmacy in London for a period, showed his interest in pure drugs in articles which appeared in William Nicholson's, *Journal of Natural Philosophy, Chemistry and the Arts* in 1798 and 1800. He commented on the prevalence of adulteration, noted the lack of pharmacopoeial standards, and suggested some simple purity tests.His great work A Treatise on Adulteration of Food and Culinary Poisons... (1820) was not directly related to the drug trade but he touched on the adulteration of drugs and medicines, particularly noting the iniquities of the drug-grinders. The book caused a considerable stir, and at least for a time, alerted the public.

Richard Phillips (1777 – 1851), pharmacist and a protegé of William Allen, sharply criticised the 1809 Pharmacopoeia Londinensis, and thought scarcely better of the amended reprint of 1815. He was commissioned to translate the next Pharmacopoeia of 1824, and took the opportunity to add a few chemical tests useful for checking purity. These were incorporated into the 1836 Pharmacopoeia in a separate section headed, ''Notes'', to which he added even more material in his translation. he was mostly concerned with chemical preparations for which, besides the old sensory tests, he used simple quantitative chemical ones. He developed criteria for some quinine salts and made use of physical constants such as freezing and boiling points.

From its earliest days the Pharmaceutical Society was conscious of the need for the medical profession and the public to have confidence in the purity of their drugs, and so in pharmacists. The first President, William Allen, pointed out in his address to the first Annual Meeting that one of the functions of the Society would be ''... the detection and prevention of adulteration.''(13) The *Pharmaceutical Journal* was to devote many pages to the subject in its early volumes. Jacob Bell drew attention to drug adulteration in general and to Senna in particular, Jonathan Pereira to that of Scammony and John Attfield wrote on contaminated precipitated sulphur,and so on.(14) Many chemists & druggists placed considerable emphasis in their advertisements on the purity of their drugs.

In December 1888 William Squire wrote in *The Lancet* of the first use of ether as an anaesthetic in London, and relates, ''My uncle (Peter Squire) only half liked the inhalation experiments; he did not give the vapour but said he would find the glass and be responsible for the purity of the ether which he liberally supplied.''(15) As Jacob Bell wrote, ''The detection of adulteration is one of the most onerous duties of the pharmaceutical chemist ....''

In the 1840s references to the microscope being applied to detect adulteration became ever more frequent. Pereira used it for example to differentiate the types of starch and to ascertain the purity of coffee, tea and pepper. Henry Deane and Henry Brady read a paper at the British Pharmaceutical Conference of 1864 entitled, ''On Microscopical Research in relation to Pharmacy'', and the pharmacist, Walter

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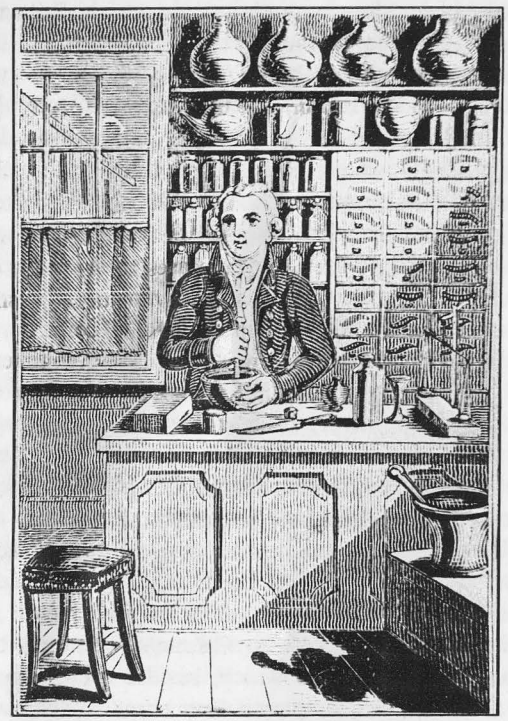

The pharmacist in his shop, from a wood-cut in The *Young Tradesman* published in 1839.

Stoddart, was another who took up the study and use of microscopy with enthusiasm.

From 1856 onwards the Censors of the College of Physicians decided to make "... an annual report on their official visits to the Apothecaries' and Chemists' shops within their Jurisdiction", (which they then took to be the City of London only.) Of the 28 shops visited, eight were found in very good condition, eight to be in good condition, and the remainder were bad, some very bad. In twelve shops there was a copy of the latest Pharmacopoeia, in others there were translations by Phillips, Nevins or Collyer; two had no copy at all. Weights and measures were defective in two shops and in four faulty preparations were condemned and thrown away. In several the poisons were not clearly labelled nor kept sufficiently separate. Six letters were addressed to the proprietors pointing out defects and censuring them. The Censors were of the belief that their "visitations were not altogether without good results, as on subsequent visits they had found marked improvement."

It is interesting to note that in the June visit of the following year, they took to asking whether the pharmacist were a member of the Pharmaceutical Society. Of the 26 shops visited, nine were owned by members and six by non-members, the remaining eleven were, one assumes, general practitioners with open shops. The standards of the shops were about equally distributed between the three groups. The most interesting thing however is their report for 1857. They said that improvement was gradually taking place. "In many instances we have expressed our marked approbation". They had especially directed their attention to the care taken of poisonous drugs and methods of sale - and found occasion to commend many methodical attempts to indicate poisonous drugs so as to avoid accidents in dispensing. "We consider though that the extension of sound chemical knowledge among the Druggists and dispensers of medicines would be the most effective safeguard against accident"(17)

This was just the view taken by Jacob Bell and most other members of Council. In the sixteen years since the formation of the Pharmaceutical Society there was no doubt that it had made its mark. members of the Society in the 1840s recognised the need for independent and specialised pharmaceutical practitioners. It was necessary that a true pharmacy should be readily identifiable and not confused with an apothecary's shop where pharmacy took second place to medicine. Nor should it be confused with what the Journal described as being only too prevalently found in country towns where, "... not only is every Grocer and Oilman a Druggist, but almost every Druggist is a Grocer and Oilman."(18) Even semi-itinerant quack medicine vendors with their appalling shops could, and did, legally call themselves chemists & druggists, as for example did Thomas Beecham.

The Society's method was to promote education and the sciences by providing evening meetings and a library, a school of pharmacy with its all important laboratory and set up a museum with the emphasis on pharmacognostical specimens. How successful the Pharmaceutical Society was in its self-appointed task is something for further discussion.

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GUARANTEED TO CURE: INVENTIONS FOR HEALING.

W.A. Jackson.

It has been said that one of the main factors which sets man apart from other animals is not that he uses tools, but that he designs and manufactures the tools he needs. This ability, combined with the desire to maintain good health and to cure disease, has been responsible for many remarkable inventions which have been of great benefit to the human race. It has also been responsible for many inventions which have been of great benefit to the inventor!

In the sixteenth century Paracelsus believed that magnetism could be of use in curing disease, and before the end of the century a healer named Valentine Greatraks had achieved some success by gently stroking afflicted parts of the body with an iron bar which had been magnetised.(1) It is probable that this, combined with Galvani's experiments on the effect of static electricity on animal muscle, and Volta's discovery that in a damp atmosphesre two dissimilar metals, such as brass and iron, can produce electricity, was responsibl;e for the idea behind Perkin's Metallic Tractors.

Dr Elisha Perkins was an American graduate of Yale, who having invented his Metallic Tractors and used them successfully on his patients, offered them for sale at $10 a pair, (half price to doctors and free to clergymen). There was sufficient demand, no doubt helped by the fact that George Washington bought a pair, to allow him to raise the price to $25. However, the Connecticut Medical Society frowned upon this commercialism, and in 1797 expelled him. This may have had an adverse effect on his sales for in 1799 we find him in New York demonstrating his Antiseptic Cure for Yellow Fever. It was singularly unfortunate that within a month of his arrival he had contracted this disease and died from it.

Shortly before this unhappy occurrence, his son Benjamin Douglas Perkins had arrived in London, and on 10th. March 1798 he applied for a patent for "The Application of Galvanism as a Curative Agent".(2) This was described as the "Discovery of a Certain Art of Relieving and Curing a Variety of Aches, Pains, and Diseases in the Human body, by Drawing over the Parts affected or those contiguous thereto, various pointed Metals, which, from the Affinity they have with the offending Matter, or from some other Cause, Extract or Draw out the same, and thus cure the Patient". The tractors were made from a combination of copper, zink (sic) and a small proportion of gold, or from iron united to a very small proportion of silver or platina. Wootten says that the tractors were united together like a pair of compasses, one arm being obtuse and the other pointed, but the original patent states that, "they may either be formed with one point or pointed at each end, or with two or more points.", and Bennion's Antique Medical Instruments contains a photograph of a pair, 7.6 cms. in length, which are pointed at one end and blunt at the other.(3) Haggard says that in use the rods were placed in contact and then drawn over the skin, but the patent advised slightly differently (4).

Elisha Perkins originally claimed that his tractors would cure pains in the head, face, teeth, breast, stomach, back and all the joints, later adding paralysis and minor deformities. The English patent says that the diseases most readily cured were rheumatism, gout, pleurisy, inflammation, spasmodic affections and most topical complaints. Relief could normally be expected within fifteen to twenty minutes of commencing treatment, but obstinate chronic diseases would need much longer, repeated two or three times a day for several weeks.

In spite of their high price (five guineas per pair) the tractors sold well in England, and Benjamin Perkins is said to have returned to America with £10,000 derived from their sale. So great was their reputation that a Perkinean Institute was established in London to enable those who were too poor to afford them to have free treatment.

The publication of James Gillray's etching Metallic Tractors in November 1801 can not have contributed to their success. Quack cures were one of the subjects favoured by the British caricaturists, and here we see a doctor, his long pigtail standing out from the back of his head, one tractor being held in his mouth while he applies the other to the pustular eruptions on his patient's nose, which the objects on the table suggest are due to a predilection for brandy punch. Flames spurt from the afflicted organ, his wig flies off and his dog looks on in amazement. The paper, the True Briton, on the table satirises Perkin's claims, saying that the tractors are a certain cure for all" Disorders, Red Noses, Gouty Toes, Windy Bowels, Broken Legs and Hump Backs". The tractors shown are similar to those illustrated by Bennion.

Their success had a relatively short life. Wootton reports that Dr Haygarth and Dr Falconer of Bath demonstrated that equally good results could be obtained with tractors made from painted wood, providing that the patient believed them to be genuine metallic ones.(5) Camp takes a rather more cynical view, saying that John Haygarth used wooden tractors painted to resemble metal, and an unnamed surgeon from Bristol Infirmary ones made from four inch nails coated with sealing wax,and that both made a good deal of money from their fake instruments while tractorisation was still in vogue.(6) There can be little doubt that but for Gillray's caricature they would have been forgotten long ago like so many other inventions.

Electrical Appliances.

As the nineteenth century progressed electricity came to be highly regarded as a cure-all. People were not really sure of its nature but it was certainly a form of energy, and as the nerves of the body carried electrical impulses it was

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an obvious remedy to put more electricity into the body if one felt jaded or suffered from nervous fatigue. Harness's Electropathic Belt offered to do this and so cure many ailments including rheumatism, lumbago, sciatica, gout, kidney complaints, epilepsy, parlysis, indigestion, constipation, female problems and general or local debility.

Cornelius Bennett Harness owned a number of patents for electrical belts including No. 4881 in 1883.(7) In this, the belt was provided with a series of bi-metal galvanic couples, or a number of battery elements each in its own pocket lined with an impervious material. All the terminals of one polarity were connected to two discs at the ends of the belt, and those of the other polarity to two discs in the middle. These discs were on the inside of the belt. The currents used were very weak and could not have had any effect on the body.

Selling at 21s. post free they were heavily advertised, testimonials from satisfied users forming a major part of the campaign. William Gunn, a professional cricketer of the period, attributed his success to wearing a Harness's Electropathic Belt. In addition, Mr Harness, described as ''The Eminent Consulting Medical Electrician'' could be consulted free of charge on all matters relating to health and the application of ''Curative Electricity'' at the company's headquarters in Oxford Street, London. Patients who were unable to attend in person could write for a ''Private Advice Form'' on which they could enter their symptoms, and then return the form for an expert opinion on the best method of treatment.

One belt was purchased by Colonel Jeremiah Brayser, an aged and infirm survivor of the siege of Lucknow in the Indian Mutiny who had retired to Margate, and complained of ''a weakness of the loins''. He was dissatisfied with the results obtained and in 1893 attempted to bring Harness and two of his colleagues (one of whom, James Montgomery McCully, was a doctor who had been struck off the medical register in 1887) to trial for conspiracy to defraud. The unfortunate colonel not only had to put up with the laughter occasioned by the suggestion that he had been contemplating marriage and had bought the belt in preparation for this, but also the frustration of hearing the Metropolitan Police magistrate, James Hannah, refuse to commit the case for trial. He gave as his reason that although medical and technical witnesses could be called upon to show that the belt was useless and Harness a charlaton, the defence could counter these with the evidence of many customers were delighted with the results achieved. In these circumstances a conviction was unlikely.(8)

The company also supplied Electrical Suspensory Bandages designed to apply weak electrical currents to the scrotum and generative organs.(9) The power was supplied by a series of alternate plates of copper and zinc on the inside of a belt connected by means of a gold cord or other suitable conductor to each other and to a series of plates, discs or pieces of copper or foil attached to the interior of the suspensory bag.Again, provision could be made for connecting the device to an external battery.

Although the Electropathic Belt was suitable for either sex to wear, many ladies considered the corset to be an indispensible item of clothing,so of course Electric Corsets could also be supplied by Mr Harness. The principle on which they were constructed were similar to those for the belt.(10) This patent also made provision, returning to an earlier form of therapy, for the production of Magnetic Corsets. The magnet could be straight or horse shoe shaped or of any convenient form of magnetised steel. In fact they could be used as stiffeners for the corsets instead of whalebone, or they could be placed in pockets whose position could be varied as required. They were said to make the most awkward figure graceful and elegant, to aid the chest in its healthy development and to strengthen the internal organs. Various ladies testified to their efficacy in treating rheumatism, nervous depression, loss of appetite and insomnia. Both the electric and magnetic corsets retailed at 5s.6d. post free, or 10s.6d. for two.

Treatment of the Throat, Eyes and Ears.

Yet another product offered by the same company was Dr Carter Moffat's Ammoniaphone. In 1884 Robert Carter Moffat, a chemist, and Thomas Gilbert Bowick patented an ''Improved Composition and Apparatus for Strengthening, Enriching and Extending the Range of the Human Voice

Advertisement for the Ammoniaphone showing Madame Patti.

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and for the treatment of Pulmonary and Other Affections''.(11) It consisted of combining 100 parts of water with 2 to 5 parts of ammonia or its compounds, 2 to 5 parts of hydrogen peroxide, and from 1 to 5 parts of any harmless volatile oil such as oil of peppermint, and then inhaling the vapour produced from a tube, approximately 10 inches long and 1 inch in diameter, containing an absorbent material such as cotton wick, saturated with this mixture. The tube could be open at both ends, or one or both ends could be fitted with removable or partially removable caps, or any other devices for admitting atmospheric air, gas or vapour. One end could be inserted into the mouth, the other end also being open, and the vapour inhaled. Alternatively a mouthpiece could be fitted and the vapour inhaled through it, one or both ends of the tube being open.

Possibly Moffat and Bowick were not confident of their ability to market their invention, but there can be no doubt that Harness saw its potential, and later the same year Harness's ''Improved Apparatus for Facilitating the Inhalation of medicated vapour'' was patented.(12) His improvement consisted of replacing the caps at the ends of the tubes with handles containing spring-loaded valves operated by push-buttons which were set into the extremities. Pressure gradually opened the valves so that the amount of air admitted could be regulated by the user. The handles could be unscrewed for the tube to be recharged.

Advertised as Dr Carter's Ammoniaphone, retailing at 21s. post free, it was recommended for asthma, bronchitis and consumption, and for strengthening and enriching the voice.The latter claim was endorsed by Madame Adelina Patti, the famous Australian singer, who in 1885 wrote that she had, ''used the Ammoniaphone and found its effects most beneficial.'' Other famous users were the Prince and Princess of Wales, and Mrs Langtry who found that it gave, ''a richness and roundness to the voice'' and was invaluable for hoarseness. Rather imaginatively *The Times* reported that the Ammoniaphone was, ''charged with a chemical compound combined so as to resemble in effect that which is produced by the soft balmy air of the Italian Peninsula.''

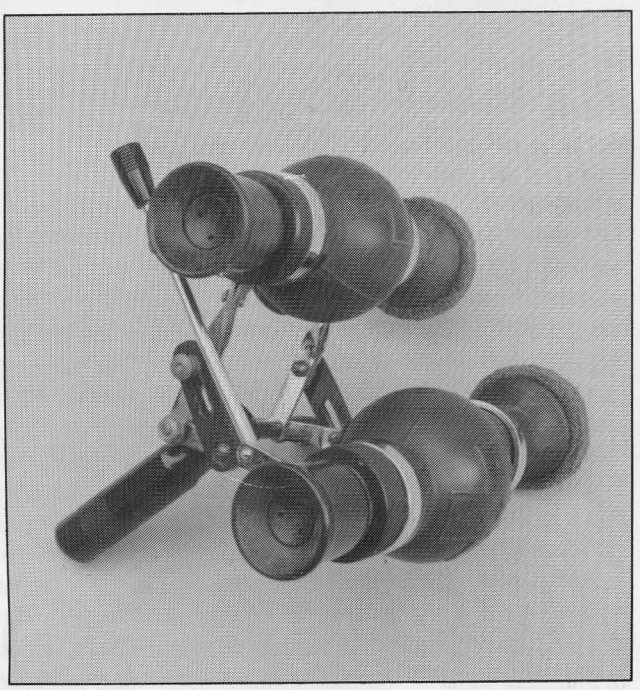
The Ammoniaphone was also sold in Australia where a surgeon, Peter J. Phillips, says that the one in his possession is approximately 18 inches long, although the overall length of the British model was said to be 25 inches.(13) Very few specimens seem to have survived, and the Royal Pharmaceutical Society of Great Britain is fortunate to have one in its Scottish headquarters.

Earlier in the nineteenth century Dr Ball's Eye Cups were patented in the USA in 1851. They were made from ivory or lignum vitae, and to each was attached a hollow india-rubber ball. This was squeezed to expel most of the air,and the cup was then applied to the lid of the closed eye.(14) They were said to improve the circulation of the eye and to restore the diminished convexity of the cornea. It was recommended that they were used for three minutes each night before retiring. Four sets of cups, varying in price from £1 6s.0d. to £2 16s.0d.per set were available in England from the sole agent J.Fletcher of Richmond Villa, Chichester.

From these cups a range of Eye massagers and Sight Improvers was developed.(15) Benjamin Frederick Stephens of Brooklyn claimed that in use the eyeball was drawn into the cup, the resulting pressure upon the cornea being harmful, and patented his ''Improvements in Surgical Instruments for Improving Eyesight'' in the USA, and then in Great Britain in 1899 and Canada in 1900.(16) In this the base of the cup held a spring-loaded button with a concave surface which was said to apply sufficient pressure to the cornea to lessen the danger of permanent distortion due to excessive use. It was marketed as ''The Ideal Sight Restorer'' by the Ideal Company of New York.

In 1911 John Highwater was granted a patent for ''Improvements in Eye Massaging or Cupping Appliances''.(17) The main difference was that each cup had its own rubber bulb which was fitted with a valve for regulating the pressure (either negative or positive) to be applied. His instrument was made by the Highwater Laboratory for the Neu-Vita Health Association and was marketed as the Neu-Vita Eye Masseur, the Perfect Sight Restorer.

A further version the ''Improved Apparatus for Massaging the Eyes'' was patented in 1931 by Leonard Russel Lacy and sold as the Neu-Vita Oculizer.(18) Additionally two soft india-rubber cups were mounted on the far side of the bulbs, and by pushing a rod to and fro these could be used



The Neu-Vita Oculizer.

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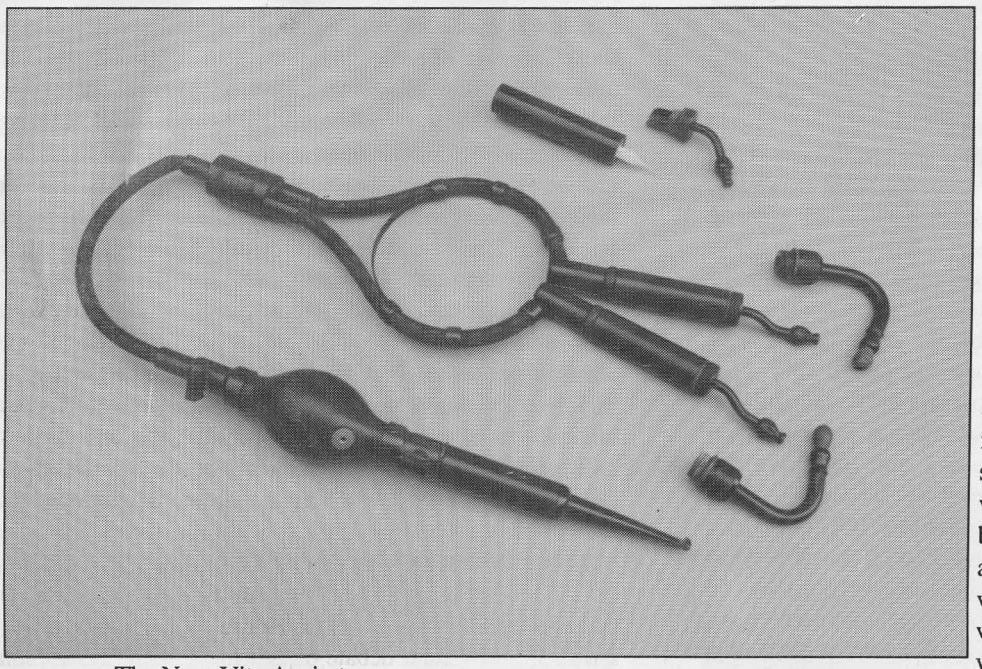
to massage the closed eye with a rotary motion. These operated by friction only and had no pneumatic connection with the rubber bulbs.

It is probable that all these appliances, despite the fact that they were in use for more than eighty years, can have been of little value and may in some cases have been harmful.

Another patent owned by Leonard Russel Lacy, ''An Improved Device for treatment of the Respiratory Passages''was accepted on 10th. May 1935.(19) This was marketed as the Neu–Vita Aspirator and was designed for massaging the interior of the ears by means of fluctuating air pressure as well as for nasal and oral inhalations.



The Neu–Vita Aspirator.

It consisted of a rubber bulb which admitted air through a non–return valve and had two other openings controlled by vulcanite taps. One of these was connected with a filter chamber containing absorbent material which could be impregnated with a volatile medicament which then led to a mouthpiece similar to those on tobacco pipes. The other tap was connected to rubber tubing leading to another filter chamber which could also hold volatile medicaments. Two tubes emerged from the end of this and were connected to rubber tubes each leading to another filter chamber suitable for containing more medication, and finally to two nasal nozzles. These could be replaced by aural nozzles if desired.

Although the patent makes no mention of it, the example which I have was adaptable for powder insufflation. The device could be used in a number of ways, and in fact in attempting to make it so versatile it became unnecessarily complicated. I have only seen two specimens, despite its relatively recent date, which suggests that it was never very popular.

The Vitalator and the Qray

Returning to electrical inventions, Roger's Vitalator, which does not seem to have been patented but was widely used in the 1920s and 1930s and can still occasionally be found in use today, was a machine designed to treat various ailments by means of high frequency alternating currents, 100,000 or more cycles per second. With these it is possible to use much higher voltages without injurious effects than with currents of lower frequency. This safety, and because the treatment was painless but visually and audibly impressive, was probably responsible for its widespread use.

The radiation was applied by a range of interchangeable electrodes which fitted into a bakelite holder. These were hollow glass tubes with the air partially exhausted to provide good conductivity for the electric current, and suitably shaped. The current caused the electrodes to be illuminated, this varying with the degree of vacuum and the gas enclosed, most showing a violet light when in use. Most models used mains electricity, a switch allowing either 100–125 volts or 200–250 volts to be used, but others could work from accumulators or private generators, varying from 4–6 volts up to 50 volts.The strength of the current was varied by means of a rheostat.

The Vitalator could be used in a number of ways, the most frequently employed being the slow stroking of the skin by the electrodes. The heat generated caused an increased flow of blood, and the makers claimed that this resulted in a local stimulation of the stream of humours of the body, the nutriment taken into the blood and lymph channels being more quickly conducted to the active organs. Conversely waste matter was removed more quickly and thoroughly. If the electrodes were applied to the surface of the body through several thicknesses of cloth, preferably woollen, a greater heating effect was obtained and so a greater effect on the deeper underlying organs.

Electrodes were also available for insertion in the various orifices of the body, the nose, ears, anus, vagina and urethra, the last two cases being treated only by a doctor. The patient was recommended to make no active movement during insertion as this might result in the electrode breaking. Should the electrode be held a short distance from the skin a discharge of electric sparks was produced, causing a tingling

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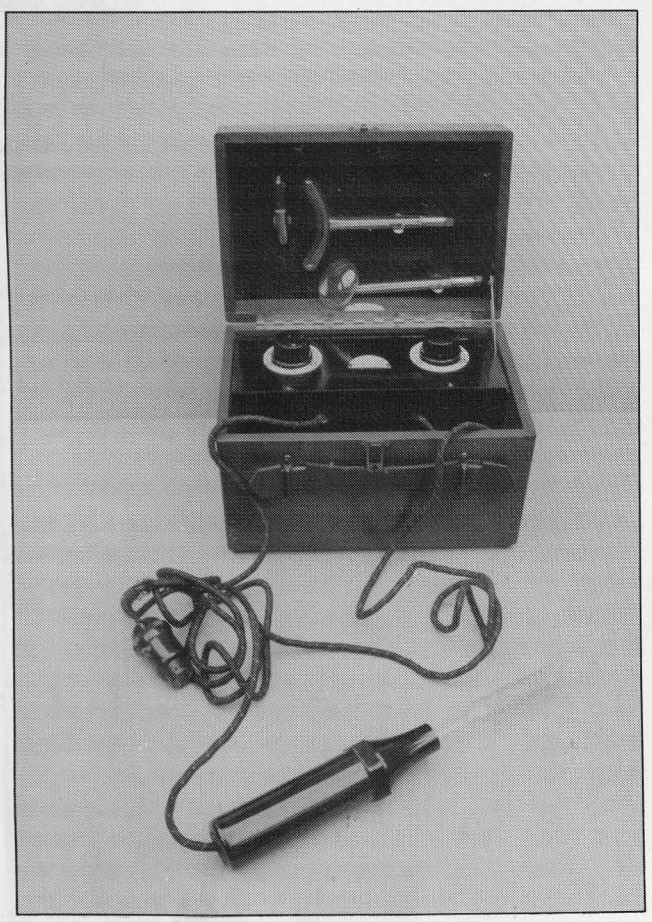
sensation. This method was said to be particularly valuable for its psychological effects.

Yet another method of treatment was ''Fulguration'', that is the sudden sharp discharge of the high frequency current upon the spot under treatment through a cautery electrode which had a small wire set in its tip. Such a discharge destroys tissue and was used for the removal of pimples, blackheads, warts, freckles, corns and proud flesh. As the treatment did not cause wounds or bleeding no scars were formed.

Perhaps less easily understood is the ''Indirect Self-Charging Treatment''. In this, the patient held the bakelite handle in one hand and the No. 12G Saturator Electrode in the other, and the current was switched on. This was said to be the most successful and effective means of improving the general state of health, stimulating the body cells and the humours into more vigorous activity. Altogether the Vitalator was advocated for treating or as an adjunct to the treatment of 127 conditions, ranging from congestion of the brain to nervous depression of the stomach, and from impotence to varicose veins. In addition it could be used to aid the production of a well developed firm bust where, as the booklet puts it, ''Dame Nature had been somewhat niggardly.''



Roger's Vitalator.

The machines were not cheap,the prices running from £3 15s.0d. to £25, the latter including 20 electrodes out of a possible 44. Additional electrodes varied from 3s.6d. to £1 15s.0d. I imagine that these machines were not harmful, and may have been of some use, if only psychologically.

I doubt whether the same can be said of the Qray Electro-radioactive Dry Compress which was said to combine mild radioactivity with regulated heat. The patent specification for this relates only to ''Improvements in Electric Heating Cushions'' describing a pad in which the electrical heating elements were embedded in a granular material such as sand enclosed in a cushion made from a flexible material such as cloth, the patent excluding asbestos and metals.(20) The cushion was divided into compartments.

These pads however were radioactive and were available in three sizes having strengths of approximately 0.15mgms., 0.30mgms., and 0.45mgms., priced at £10 10s., and £18 10s. respectively. Presumably the strength related to the amount of radioactive material contained in the pad but it is not clear whether this was radium or not. The specimen that I have has an on/off switch which allows three different degrees of heat to be used; it probably dates from the mid 1950s.

A letter from the chairman of Radium Electric Ltd., who marketed the product, advocated its use for rheumatism, arthritis, fibrositis and other painful conditions, and said that one firm had just submitted its 38th. repeat order. An additional leaflet contained a number of unsolicited testimonials dating from 1950 to 1954, one of which was from a customer who was returning a compress which had been in use for thirteen years, and was ordering another.

So far I have been unable to find out when the Qray Compress first became available, but it was the subject of a ''meritorious statement'' in the House of Commons during a Ministry of Health debate on 8th.June 1937. It was still on sale in 1954. Over this period quite a number of people must have received appreciable doses of radiation but I have not come across any reports of adverse reactions from its use.

When one tries to discover when it was first realised that radioactivity could be harmful, it is difficult to avoid the feeling that there was a general wish to ignore the evidence. Even in 1982, the McGraw-Hill *Encyclopaedia of Science and Technology* states, ''The biological effects of small doses of radiation cannot yet be estimated accurately'' and ''the risks of low level exposure cannot be estimated.''

Current advertisements in the popular press and catalogues distributed by post show that there are still many entrepreneurs who believe that the public are eagerly awaiting the chance to purchase their latest products. Some of these are merely copies or adaptations of older ideas, such as wooden massagers which operate on the same principle as

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The Qray Electro-radioactive Dry Compress.

the Victorian Massage Ball, and magnetic bracelets which are claimed to relieve rheumatism. Others use old ideas in new ways, like Hemorr-Ice which is used as a cold pack for haemorrhoids, a plastic tube containing a cryogenic liquid being inserted into the fundament; between applications it can be cooled in the refrigerator.

The Magnetic Ear Clip combines two old ideas, magnetism and acupuncture, claiming to influence one of the acupuncture points in the ear, and thereby helping the wearer to adhere to a calorie controlled diet. The outer ear should be free from grease and the clip positioned in the middle of it with the round piece containing the magnet on the outside.It should be worn on the left ear for a right-handed person, and on the right for one who is left-handed. If the wearer experiences a pang of hunger, the clip should be rubbed or gently squeezed to help resistance to a tempting snack. It is recommended that the clip be worn three times a day for one hour before meal-times and for one hour before bedtime. Users are warned that the clip can not perform miracles, only help them to diet, and are advised to take more exercise.

Such inventions as these do little harm, and I should be sorry to see them and their like disappear from the market as they add a little colour to everyday life, and of course one can never discount the possibility that they may be of some benefit to the user.

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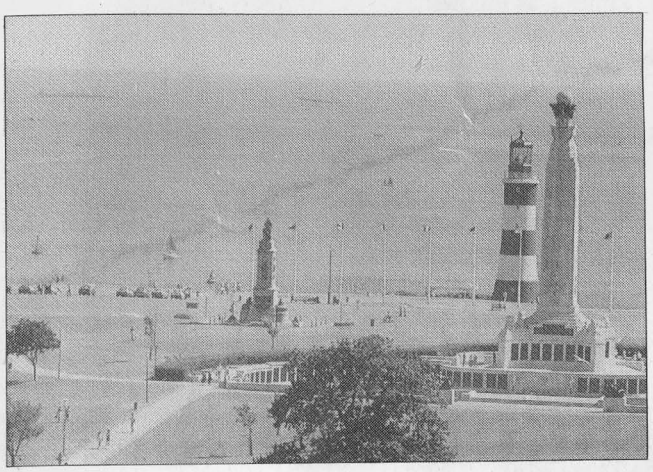
Diary Dates.

11 November 1992.

Dr D.Jack,''Carlo Erba and Dioscoride Vitali:two key figures in Italian pharmacy.''

2nd.3rd.4th.April 1993.

The Spring Conference will be held at the Plymouth Moat House, Plymouth Hoe. Owing to successful negotiations on the part of our Treasurer costs will be no higher than they were in 1992 and there is no single room supplement. Equally advantageous terms are available for those who wish to stay an extra day.



Society Members' Activities.

On 12 June 1992 Mervyn Madge,chairman of the British Homeopathic Association had the honour of receiving the association's patron, Her Majesty Queen Elizabeth the Queen Mother, on the occasion of its 90th. anniversary.

Dr Joan Lane has had published by the Worcester Historical Society, *Worcester Infirmary in the Eighteenth century.*(44pp) It is obtainable from R.Whittaker, St. Helen's Record Office,Fish St., Worcester, WR1 2HW. Price £4.75 plus 50p. for postage and packaging.

We are sorry to hear from Germany of the death on 14 May 1992 of Dr Rudolph Schmitz who did so much to put the study of the History of Pharmacy on the sound footing that it is today.

The appearance of the prescription stamps in our last number has encouraged Dr Glenn Sonnedecker of the American Institute of the History of Pharmacy to send us a specimen of the stamp bearing the head of Hubert Humphrey which commemorated not only a former Vice-President of the USA but a registered pharmacist as well.

1848

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JOHN GERARD AND HIS HERBAL.

Dr. W.E.Court.

> ''For if delight may provoke mens labour,
> what greater delight is there to behold
> the earth apparelled with plants, as with
> a robe of embroidered worke, set with Orient
> pearles and garnished with great diversitie
> of rare and costly jewels ?''
> J.Gerard.

John Gerard was born in Nantwich in 1545 where he gained his early education at Wistaston, a nearby small community. Little is known about his early life and origins although the coat–of–arms reproduced in his herbal indicates that he was descended from a younger branch of the Gerards of Ince in Lancashire.

At an early age Gerard became interested in medicine and was apprenticed in 1562 to Alexander Mason, a prominent member of the Barber Surgeons' Company in London. He was admitted a Freeman of that Company in 1569 and was active in its affairs. He apparently also gained experience as a ship's surgeon, travelling in the Baltic and possibly to the Mediterranean.

Although precise dates are not known, it would appear that Gerard was resident in London before 1577. There he established himself, not only as a surgeon, but also as a successful gardener and became the superintendent of gardens for Lord Burleigh in the Strand and at Theobalds in Hertfordshire for at least twenty years (1577–1598). His standing was such that he was appointed curator of the physic garden established by the College of Physicians in Knightrider Street near St Paul's Cathedral (1586–1604).In addition, he had his own garden, probably near Chancery Lane, Holborn, where he grew more than a thousand species of useful plants.

In 1595 Gerard was elected to the Court of Assistants of the Barber Surgeons' Company, and the following year privately published a catalogue of the plants grown in his own garden. A short work of just 24 pages, it is a treasured possession in the Sloane Collection at the British Museum, and is reputedly the earliest professedly complete published catalogue of a single garden. It must have been popular because John Norton, the Queen's printer, published a second edition in 1599.

Gerard in 1597 suffered a persistent attack of grievous ague, but nevertheless, became the Junior Warden of his Company and published the first edition of his herbal. The following January, and also in 1607, Gerard was appointed an examiner of candidates for admission to the freedom of the Barber Surgeons'.

Thomas Johnson's edition of 1663

In November 1602 reference was made to a committee meeting to discuss the question of a garden for a certain ''Mr Gerrard''. No minutes of the meeting are extant but it is assumed that the matter came to a successful conclusion as a lease was granted to Gerard by Queen Anne, consort of James I, as follows:

''Anna R.

Anne by the grace of God Queene of England, Scotland, Fraunce and Ireland ... KNOW YEE that for and in consideracon of the some of Five shillings of lawfull money of England... payd by John Gerrard of London Surgeon and Herbarist to the Kings ma(jes)tie ... also for divers other causes but especially of his singular and approved art skill and industrie in planting nursing and preserving plants hearbes flowers and fruits of all kindes We are pleased to graunt unto the said John Gerard one garden plot or piece of ground belonginge and adjoining on the east part to o(u)r mansion called Somersett howse ... YEELDING ... yearlie for our owne use onely at the due and proper seasons of the yeare a convenient proportion and quantitie of herbes flowers

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and fruite.... Given under o(u)r seale at Whitehall the Fourteenth daie of August in the yeere of the Kings Ma(jes)tie of England France and Ireland the second and of Scotland the eight and thirtie.''

Gerard's control of this garden did not last long; his interest in the lease ceased in 1605 when it was transferred to Robert, Earl of Salisbury, the second son of Lord Burleigh, at that time, Lord Treasurer of England and joint Secretary of State with Sir Francis Walsingham. The document however indicates Gerard's standing as an officially appointed surgeon and ''Herbarist'' to James I.

John Gerard was elected Master of the Barber Surgeons' in 1608, but there are no records surviving to relate his activities in this post. He died in February 1612 and was interred in St. Andrew's Church, Holborn. The circumstances of his death are not known and little information is available about his wife although she helped him in his work. No will has been found so it is not possible to assess his financial standing or to trace any surviving children.

Undoubtedly Gerard's claim to fame is his herbal or book of medicinal plants. Its origin is not precisely known but it is generally believed that Gerard succeeded in obtaining a copy of the work of a member of the College of Physicians named Priest. Apparently this Dr Robert Priest had been commissioned by John Norton the printer to prepare an English translation of Dodoen's *Pemptades* (1583). Rembert Dodoens (1517–1586), also known as Dodonaeus, was a celebrated Belgian botanist and physician who produced an extensive herbal or *Cruydeboek* in 1544. Based on the earlier German works of scholars such as the physician–botanist Leonhart Fuchs (1501–1566), Dodoens' volume classified plants by their properties and reciprocal affinities. He followed Fuch's aims of presenting accurate, alphabetically arranged, medicinal plant descriptions, and thus, reliable identification as a route towards improved standards of medicine. A subsequent book, *Stirpium Historiae Pemptades* (1583) was almost entirely translated from Latin to English by Dr Priest but was not completed owing to his death

The manner of Gerard's assumed acquisition of Priest's manuscript is not known. In his introductory remarks to ''the courteous and well-willing Readers'' Gerard states his aims and methods. ''I have here therefore set downe not only the names of sundry Plants, but also their natures, their proportions and properties, their affects and effects, their increase and decrease, their flourishing and fading, their distinct varieties and severall qualities, as well as those which our own countrey yeeldeth, as of others which i have fetched further, or drawn out by perusing divers Herbals set forth in other languages: wherein none of my countrymen have to my knowledge taken any pained, since that excellent Worke of Master Doctor Turner. After which time Master Lyte a worshipful Gentleman translated Dodonaeus out of the French into English; and since that, Doctor Priest one of our London Colledge hath (as I heard) translated the last edition of Dodonaeus, and meant to publish the same; but being prevented by death, his translation likewise perished. Lastly my selfe, one of the least among many, have presumed to set forth unto the view of the World, the first fruits of these myne owne labours, which if they be such as may content the Reader, I shall thinke my selfe well rewarded.''

Significantly there is no reference to his use of Priest's work,no kind acknowledgment and no thanks. Nevertheless at the beginning of Gerard's 1597 edition there is a contribution by Stephen Bredwell,''Physition'', who wrote, ''Dr Priest, for his translation of so much Dodonaeus, hath hereby left a tombe for his honourable sepulchre. Master Gerard comming last, but not least, hath many waies accommodated the whole worke unto our English nation''. Many scholars have suggested that this means that Gerard in an underhand way embodied Priest's work in his own.

Having obtained the script, Gerard is believed to have set about re–arranging the text using the new classification system of the French botanist and physician Matthias de l'Obel (1538–1616), also known as Matthias Lobelius. De l'Obel is credited with the first reports of some eighty British plants including *Atropa belladonna.* His classificatory system as published in *Stirpium Adversaria Nova* (1570)depended on leaf form. Although a great advance in his time, the system falls far short of the modern, taxonomical, botanical classification initiated by Carl von Linne or Carolus Linnaeus (1707–1778) based on floral characteristics.

Gerard needed to illustrate his re–arranged version and made use of some 1,800 woodcuts culled, with the assistance of John Norton, from the collection of the Frankfurt–am–Main printer Nicolaus Bassaeus. The wood–blocks borrowed were probably also used by Jacob Theodor of Bergzabern (c.1520–1590),under his by–name of Tabernaemontanus, in his work *Eicones Plantarum Seu Stirpium* (1590). Only sixteen of the original 1,800 plates are believed to be Gerard's own work.

John Gerard is usually considered not to have been a competent scientist although a very good gardener who could grow and propagate many plants not indigenous to the British Isles. It is stated that he misplaced diagrams in his text and that the final work was poorly presented, consequently the original work is rarely referred to by scholars. Nevertheless he made his mark. His first edition was much criticised by the apothecaries, particularly by James Garret of London, who objected to misplaced and misleading illustrations. Matthias de l'Obel, who was in England at the time, was, we are told, invited to correct the draft, but after some thousand corrections, Gerard decided that no further alteration was necessary,believing the work to be sufficiently accurate. He had laid out his work in 800 chapters or monographs that revealed the species of plant as

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then understood, the common and botanical names, the normal habitats, details of flowering times, "virtues" or uses and much folklore.

Despite its shortcomings, Gerard's publication was a success and caught the imagination of the general public who did not worry about scientific niceties. Gerard's death enabled the publisher to ask Thomas Johnson (c.1604–1644), a Yorkshire-born London apothecary, to produce an enlarged and much corrected edition. This was published in 1633, followed by a further edition in 1636.

Thomas Johnson stressed the importance of plants in everyday life, stating that "God of his infinite goodnesse and bounty hath by the medium of plants bestowed almost all food, clothing and medicines upon man." He was a great believer in practical botany learnt in the natural habitat. His reports in *Herborizings* published in 1629 and 1632 describe botanical excursions in the London suburbs by apothecaries and their apprentices; he catalogued many plants of the London area for the first time.

In compiling the new editions, Johnson was able to use the excellent and accurate plant descriptions prepared by his close friend and colleague,John Goodyear,and plates from the collection of the Flemish bookbinder turned printer, Christophe Plantin of Antwerp (1520–1589). Plantin had advanced the acceptability of excellent monographs by publishing the scholarly works of Dodoens, de l'Obel, and the French botanist Charles de l'Ecluse (Carolus Clusius). The last named produced fine illustrations of the current materia medica including vanilla, pimento, star anise and canella. The 1636 edition of Gerard's *Herball* comprised 1,630 pages without the index and included about 2,850 illustrations, some 2,766 having been used in Plantin's earlier publications.

Unfortunately for botanical science Thomas Johnson died prematurely after being wounded during the Civil War. A gallant and competent Royalist Lieutenant-Colonel, he was defending Basing House in Hampshire in the name of the King.

Many reports after John Gerard's death repeated the insinuation that he was no scientist or scholar. Contemporary records offer little explanation of his true professional standing and ability , yet his book was undoubtedly popular and is still to be found in print in revised form. To explain this paradox one should consider the state of science and medicine in Gerard's time.

In 1600 chemistry was still quite primitive, the early work of the Greek scholars (600 B.C.-400 A.D.) having been taken up and developed in Byzantium and Persia, and further advanced by the Arabic chemists (600–1300 A.D.) Roger Bacon (1214–1292) and Paracelsus (1493–1541) contributed to chemistry, particularly iatrochemistry, but the major developments occurred after Gerard's death. Similarly,botany was not well developed. The belief in the Doctrine of Signatures encouraged scholars to make fruitless searches but at least they gained a better understanding of the individual plants. The greatest progress occurred very much later when the microscope (late 17th. century) and phytochemical methods (18th.- 19th. centuries) were exploited.

Medicine too had made little progress. Dioscorides and Galen still dominated medical thinking, although venesection and the use of mercury,antimony and arsenic were also practised. Gerard was probably an empiricist. He travelled frequently and collected specimens, particularly in southern England. His medical training would have involved study of the classical authors, Aristotle (384–322 B.C.),Pliny the Elder(23–79 A.D.) Dioscorides (50–100 A.D.) and Galen (130–201 A.D.), and Avicenna (980–1037 A.D.), and he would have known of the Doctrine of Signatures as expounded by the Swiss alchemist and physician, Paracelsus (1493–1541). His materia medica was probably derived from,the then,recent works of William Turner *(A New Herball,* 1551–1568) and Henry Lyte *(Nievve Herball,* 1578). Turner's book was illustrated with Fuchs' drawings the product of the teamwork of Fuchs, Albrecht Meyer the artist, Heinrich Fullmaurer who transferred the accurate drawings onto the woodblocks, and Veit Rudolf Speckle who cut the final blocks. Significantly Gerard used many of these illustrations in his first edition. Lyte's book was based on Charles de l'Ecluse's *Histoire des Plantes,* an emended and amended French translation of Dodoen's Dutch *Cruydeboek* of 1554. Gerard must also have used the *Stirpium Adversaria Nova* published in 1570 by de l'Obel and his colleague Pierre Pena.

Although Gerard's scholarship has been questioned, his education and training do not suggest, despite his own self-effacement, that he was any less competent than other surgeons and apothecaries. One can surmise that in the context of his time Gerard was reasonably well educated. His social position can only be assessed by consideration of his appointments and friends. As already noted he progressed during the years 1597–1608 from Junior Warden to Master of the Barber Surgeons' as well as examining entrants for the freedom of the Company. In addition he was appointed Surgeon and "Herbarist" to James I which probably indicates an armigerous man of some social standing.

Gerard had many friends, close study of his herbal revealing some fifty persons with whom he enjoyed cordial relationships. Their actions towards him suggest that he was much respected. For example, George Baker, one of the chief surgeons-in-ordinary to Queen Elizabeth, referred in the introduction to the *Herball* to Gerard's widespread knowledge of simples and to his skill in cultivating rare and exotic plants. In the monograph on ginger, Gerard mentions correspondence with the learned Matthias de l'Obel concerning a misleading illustration of the drug, and "Englished" the Latin communication in which de l'Obel commends Mr John Gerard as an expert "Herbarist and

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master of success in Surgery''.

Under the heading ''Of Thornie Apples'', Gerard refers to the receipt of seeds of another thornapple species from Lord Edward Zouch, and also of the supply of seeds from Jean Robin of Paris, an excellent plantsman. Lord Zouch owned a garden at Hackney which was supervised by de l'Obel after his return in 1585 from the Netherlands where he had served as physician to William the Silent. Jean Robin, the director of the Jardin du Roi, was termed by Gerard, ''my loving friend John Robin of Paris'' and as ''Robinus of Paris, that painfull and most curious searcher of Simples''. Later, in the monograph ''Of Barren-wort'', Gerard writes of him as ''the French King's Herbarist, dwelling in Paris at the signe of the blacke head, in the streete called Du bout du monde, in English, The end of the world.''

Another associate was ''my loving friend Mr James Garret, a curious searcher of Simples and learned Apothecarie of London'' who was an expert on tulips and supplied Mountain Lilies and Ladies Slipper to Gerard. Of the last he wrote, ''I have a plant in my garden, which I received from Mr Garret Apothecarie, my very good friend.'' We learn too of ''my friend Mr John Milion in Old-Street'', of ''my lady Heskiths house, two miles from Whawley (in Lancashire), of Thomas Hesketh, of William Marshall, surgeon on the *Hercules*, and many other references in the book indicate Gerard's circle of friends and correspondents.

The *Herball* has been summarised as Priest's translation expanded by Gerard's personal experience of the British flora, his addition of interesting non-medical plants such as tulips, pinks and thrift, and the insertion of folkloric anecdotes, all in attractive Elizabethan English. Gerard, the author has been accused of plagiary. Can this proposition really be justified ? All writers use the findings of their predecessors, evaluating that which is good and worthwhile and that which should be omitted. In Gerard's time scientific writings were certainly not as carefully referenced as today's offerings, but he does refer to the ancient scholars such as Theophrastus, Pliny, Dioscorides and Galen, as well as, in his time, the more recent works of Mattioli (1501-1577), Turner (1515-1568), Gesner (1516-1565), Dodoens, de l'Ecluse (1526-1609), Camerarius (1534-1598), de l'Obel, Pena (fl.1570) and a friendly reference to Mr Goodyer's description of Jerusalem Artichoke. Would Gerard therefore have ignored the same courtesy for Dr Priest ?

Gerard's tome is very large; it must have taken considerable time to compile. With his commitments as a practising surgeon, gardens supervisor and active official of his professional body, he was a very busy man and his literary efforts would have been a spare-time occupation over a long period. Priest died in 1596; Gerard published his work in 1597. Jeffers (1967) has suggested that Gerard, assisted by his friend de l'Obel, was already compiling a herbal before Priest commenced his translation of Dodoens' work. As Priest, Gerard, and de l'Obel all co-operated with the printer John norton, many ideas could have been discussed and exchanged, and scripts may even have been read, but the time-scale involved was such that Gerard's work must have been largely his own. Like Stearn (1972) I deem it fair to credit Gerard with compilation of his own herbal.

Much of the criticism of Gerard stems from Johnson's smug observations in the second and third editions of the herbal. The then quality of botanical illustrations was not consistently high, and contemporary reports of Gerard and de l'Obel disagreeing about the identity of woodblocks are not surprising as today's scholars would also have authentication problems with the original blocks. Dr Daydon Jackson suggested that the maligned Gerard would probably have been more knowledgeable than de l'Obel when plants growing in Gerard's own garden were under consideration; also Gerard's English was much better. Johnson solved such problems by replacing most of the illustrations with those of Plantin's collection.

The harsh treatment of Gerard by Johnson is typically shewn in the monograph ''Of Water Crow-foot''. States Johnson of the confusion of *Ranunculus aquatilis* and *Hepatica alba,* ''I know none that commit this great error here mentioned, neither have I knowne either the one or the other ever used or appointed in medicine with us in England; though Dodonaeus (from whom our Author had this and most else) blames his countrymen for this mistake and error.'' Such an insertion supported the view held by Arber (1912) that Gerard definitely used Priest's work and that he was not very competent. But Gerard was a surgeon and Johnson was an apothecary, a member of the newly formed Society of Apothecaries (founded 1617) an organisation seeking to establish its standing in the medical field. Significantly Gerard's delightful herbal recipes were omitted from Johnson's revisions; after all, such recipes were considered to be the apothecaries' birthright.

Was Gerard, ''being no Graduate, but a country Schollar'' as he stated, so incompetent ? Many commentators have cited and made great play with the story of the barnacle goose tree, a mythological tale of geese arising from shells growing on certain trees in Lancashire and northern Scotland. Was John Gerard worse than others, such as his forerunner,William Turner (1558) who also included the goose tale, or his successor,John Parkinson (1629) who stressed the value of the horn of the unicorn ? Gerard did not support the Doctrine of Signatures or Similitudes in his monographs on Floure-Gentle *(Amaranthus purpureus)* and Mandrake, although he is less dogmatic with respect to Eyebright *(Euphrasia)*. Indeed Gerard can be regarded as more scientific than the later William Cole (fl.1656) who strongly advocated the signatures, and Nicholas Culpeper (1616-1654) who propagated quite successfully his erroneous theory of astrological botanical medicine as well

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as the Doctrine of Signatures.

Browsing through Gerard's pages one meets the cautious, not the incompetent practitioner, the surgeon who advises against British poisonous plants such as Sleepy (Deadly) Nightshade, Spurge, Wolfsbane (Aconites) and Meadow Saffron (Colchicum), although Gerard and his contemporaries knew nothing of the value and danger of Foxglove.

Gerard must be regarded as a man of his time. We can not be sure of the exact origins of his work; Priest,de l'Obel and Gerard's many friends and associates all contributed to the corpus of knowledge presented, but Gerard must have been the driving force behind this English treatise that formed a noteworthy step in the development of our pharmacopoeias and codices. He deserves our thanks for the preservation of Elizabethan folklore, the recording of quaint names such as "Live-for-ever", "Stinking Mother-wort" and "Apples of Love", the insertion of horticultural titbits and the collation of ancient uses of plants. How else could we learn of the use of Cuckoo Pint or Wake Robin root starch ? "The most pure and white starch ... but most hurtfull to the hands of the Launderesse that hath the handling of it, for it choppeth, blistereth and maketh the hands rough and rugged, and withall smarting." Or of the "Ground Ivy ore Ale-hoofe" of which he wrote, "The women of our northerne parts, especially about Wales and Cheshire, do turne the herbe Ale-hoof into their Ale; but the reason thereof I know not: notwithstanding without all controversie it is most singular against the griefes aforesaid; being tunned up in ale and drunke...."

John Gerard's *Herball* remains a treasured part of our British heritage. As Thomas Johnson so grudgingly admitted, "Although there were many faults in the worke, yet judge well of the Author".

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Letters.

We have been asked by the International Academy of the History of Pharmacy to publish a letter from a Mr John Sutham of 320, East 42nd.Street, Apt.1803, New York. 10017.

"I am currently doing a research on the European and Engliah apothecary personal-care products and/or companies,which using traditional formulary to formulate their products, have withstood the advance of modern technology. The products ... are of the 19th or 20th century. I am also interested in acquiring a literature or publication on how the Apothecary Arts has developed over time. I would greatly appreciate any assistance ...."

Mr C.P. Thackray of the Thackray Medical Museum in Leeds has written to say that the device on the 1s. and 2s. NHS stamps shown in our last issue should not be described as Aesculapian as it is a Caduceus which is a wand for a mythical herald such as Hermes or Mercury. Aesculapius is depicted with a roughly hewn staff around which a single snake is entwined.

Useful Documents.

The curatorial officers of the Royal Commission on Historical Manuscripts have kindly extracted for us from their annual publication *Accessions to Repositories* (1990 and 1991) the following documents:

Prescription books, 1886-1947 of **Sydney J.Buckle** of Great Torrington, now in North Devon Record Office, Tuly St., Barnstaple, EX32 7EJ.

Prescription and formulae books, 1907-85,of **Merkins,** chemists of Cottingham, now in Humberside County Archive Office, County Hall, Beverley, HU17 9BA.

The Lincoln General Dispensary records, 1826-1979, are now in the Lincs. Archive Office, The Castle,Lincoln. LN1 3AB.

The correspondence and papers of Thomas Hodgkin (1798-1866) and **Luke Howard** (1772-1864) are now in the Wellcome Institute.

Wiveliscombe Dispensary records, 1816-1949, are to be found in the Somerset Record office, Obridge Road, Taunton,TA2 7PU.

The records of **Henry Sykes & Son,** Ltd.,chemists, Huddersfield are at the West Yorks.Archives Service, Central Library, Princess Alexandra Walk, Huddersfield, HDI 2SU.

Prescription books, 1840-1900, of **James Lewis,** chemist, Ware are in Herts. R.O., County Hall, Hertford SG13 8DE.

The Leicestershire R.O., 57 New Walk, Leicester, LE1 7JB, now hold the prescription books 1894-1951 of **W.T.Hind** of Leicester

The prescription books,c.1870-1950 of **John T.Davies** of Swansea are at West Glamorgan R.O., County Hall, Swansea. SA1 3SN.

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DOMESTIC MEDICINE CHESTS:
Home Pharmacy in the Nineteenth Century.

Dr Anne Mortimer Young.

When I was a young medical student, my father bought me a small mahogany box. The top opens to reveal several glass bottles with ground glass stoppers and there is a partitioned drawer at the base containing scales and weights, a medicine glass graduated in fluid ounces and drachms, and a mortar and pestle. The box was packed away until 1978 when I learnt it was a domestic medicine chest, the nineteenth century precursor of today's bathroom cabinet.

Nineteenth century examples are relatively plentiful but eighteenth century British ones are uncommon.The latter tend to be small wooden or fish-skin boxes holding six to eight round bottles, and have truncated lids. Apart from a non-graduated medicine glass,and sometimes a glass funnel, there is no apparatus. Continental boxes from the eighteenth and even the seventeenth centuries are more plentiful. These tend to be small also but have domed lids and are usually ornamented with decorative metal bands.(1) Larger and more elaborately equipped British eighteenth century cabinets are occasionally found.

A typically mid-eighteenth century medical cabinet contained, Smelling Salts, Sal Volatile, Hartshorn, Arquebusade (Compound Sage Water used externally for gunshot and other wounds, and internally as a ''digestif''), Lavendar Drops and Eau de Luce (Alcohol, Ammonia and Oil of Amber, also used externally in the treatment of wounds).

Small 18th century English chests

Towards the closing decades of the eighteenth century domestic medicine chests became popular and fashionable among the gentry and burgeoning middle classes. By 1808, D.Cox, a Gloucester chemist and druggist could illustrate his *New Medicine Compendium* with engravings of assorted chests he could supply. These are larger than the eighteenth century boxes and the bottles are square or rectangular in section allowing more to be fitted into the available space. Chests containing medicines and medical instruments existed in earlier times but these were for use by professionals, not the lay public.(2)

As may be seen from the Cox illustration, nineteenth century chests for home use were available in a variety of sizes and shapes, and contained apparatus for compounding remedies. Broadly speaking they fall into two main groups, those like trunks with rising lids, and those which open like cupboards. Cabinet makers who specialised in dressing chests, liquor cabinets and tea-caddies made the boxes, but they were advertised and sold by pharmacists.(3)

There are nearly 500 boxes in the Wellcome collection, and a study of the labels on the bottles show that about half originated in London and were sold by, for example, Savory & Moore, Godfrey, and Peter Squire, whilst the remainder hailed from towns, cities and ports all over Britain with a few from our colonies.(4)

Why did they become so popular ? For centuries the preparation of cordials, surfeit-waters, plasters, cooling draughts etc. from herbs, animal products and simple household chemicals had been seen as part of normal still-room and kitchen activities of gentlewomen, the ladies using ''receipts'' from herbals, early printed books on household management, and the hand written books of ''physical receipts'' handed down from mother to daughter.(5) Then, in the 1760s, Dr Tissot in Switzerland and Dr William Buchan in England wrote books on domestic medicine addressed to the lay public.(6) Both authors provided directions for preparing remedies, simpler in execution than the old ''receipts''with their many ingredients, but alao requiring much more precise measurement. Both authors wrote that the oils, essences and distillations which needed long and complicated preparation could be more conveniently bought than made in the home

Then Dr Hugh Smith published *The Family Physician*

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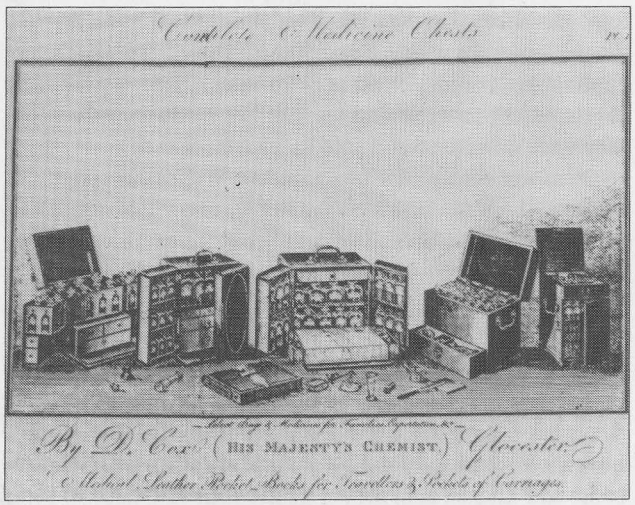
giving details of medicine chests and their contents which he could supply from his ''chymical'' warehouse.(7) Dr Richard Reece further popularised and supplied medicine chests and drugs, including what he called ''the new Chemical Remedies'' which included Morphine, Strychnine and Emetine from his ''Chymical Hall'' in Piccadilly.(8) In addition to magnificent mahogany chests with flint glass bottles, Dr Reece supplied, ''A chest made chiefly of oak on a very economical plan, and supplied with black square bottles'' which he called ''The Country Clergyman's Dispensary'' as he maintained that ''one person at least in every village or parish, where a medical man does not reside, ought to be provided with a Medicine Chest ....''



Cox's Compendium

Studying surviving examples of chests, some lacking contents, others over-enthusiastically restored, does not provide accurate information as to the original contents. If one is lucky enough to encounter chests where the contents are clearly contemporary, more accurate lists may be made. Fortunately numerous publications were available, ranging from eight page booklets to sizeable volumes, which give details of original contents and fittings. Only rarely do these appear to have been sold with the chests, or else have become separated from them over the years, and are now difficult to find.(9) Most were written anonymously, the authors being referred to as ''A Medical Practitioner'' or ''A Member of the Royal College of Surgeons''. John Savory of Savory and Moore, a member of the Society of Apothecaries, did however write his own compendium.(10)

All the guides have lists of the drugs and the apparatus thought appropriate. Details of apothecary weights and measures are always given, as are tables relating dosage to age.(11) Graves' table was used until about 1830 and was then superceded by that of Glaubius. They also include descriptions and brief indications on the uses of the medicines. Examples from a sixteen page booklet of 1802 are given below.(12)

Antimonial Wine

''This is a pleasant and ready emetic; a table spoonful generally answers; if not, half the quantity may be given every fifteen minutes till it does vomit; given to children in the hooping-cough, it cleanses the stomach of that viscid phlegm which renders the cough so violent and endangers their suffocation; this like every other emetic may be worked off, with either warm water, water gruel, or chamomile tea, which ever is the most agreeable.''

Sal Volatile

''Relief is often experienced from smelling to this medicine in giddines, and pain of the head; the quantity of half a tea spoonful, taken in a glass of water, is serviceable in oppression in the stomach, arising from indigestion or wind.''

Tincture of Senna

''A safe and warm cathartic – the dose two table spoonfuls – it may be taken at any time.''

Larger guides give more details of the drugs and their indications, and in addition long accounts of symptoms such as ''colic'',''diarrhoea'' or ''looseness'' with prescriptions for appropriate remedies. Typical prescriptions were, ''Two grains of Calomel mixed with six or eight of Jalap is successfully administered to children against worm and the breakings out to which they are liable from a gross state of the blood''. (From J.A.Bond's *Companion to the Medicine Chest.*); or the Diaphoretic Mixture of John Savory which comprised four ounces of Spirit of Minderus, half an ounce of Spirit of Nitre, one ounce of Extract of Henbane, two drachms each of Antimonial Wine and Ipecacuanha Wine. ten grains of Extract of Hemlock and twelve ounces of water. Instructions on the ''Revival of the Apparently Drowned'', and on the treatment of surgical emergencies such as wounds and fractures also appear in these much more comprehensive texts. In most cases the authors emphasise that medical advice should be sought as soon as possible, and that drugs should be exhibited in cautious dosage.

From a study of the Wellcome chests, J.K.Crellin concluded that the drugs fall into three main therapeutic categories, purgatives, stimulants, and preparations for external use, to which should be added a fourth major category, that of antacids ranging from simple calcined magnesia to a mixture of powdered crabs' claws, red coral, pearls and bezoar.

Other therapeutic categories he found to be represented by only one or two items even in the largest chest. These included fever remedies and diaphoretics,(for example antimony preparations) analgesics(opium and its derivatives),anti-convulsants (Tincture of Soot),emetics (Ipecacuanha, Tartar Emetic) and anti-diarrhoeal mixtures (Laudanum, chalk mixtures).(13)

These drugs reflect the armamenterium of the orthodox or allopathic nineteenth century practitioners. Ancient theories still underlined attitudes to treatment which aimed

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at ridding the body of noxious toxins and "balancing the humours". The medical man could offer little more except copious blood-letting, blistering and cautery to weaken the unfortunate patient further.

Personal idiosyncracies must have influenced the chest contents, as oddities are found. Amongst these I have found Gallic Acid crystals "to stop leech bleeding", Lithium Carbonate, Croton Oil, Indian Hemp and Acacia. Unusual accessories may also turn up in chests, for example, probangs, leech tubes and lancets. Leeches were extensively used on a self-help basis, but most guides emphasise that venesection should be left to the professionals.

the fourth century B.C. Later he maintained that his therapeutic substances worked more effectively the more they were diluted.

The introduction of homeopathy led to a certain amount of controversy, and also to the appearance of homeopathic medicine chests produced by homeopathic chemists such as Ashton & Parsons, Epps, and Headland of Hanover Square. Homeopathic chests tend to follow a standard plan being a trunk-like form. In the body of the chest are plywood racks holding rows of small round corked bottles which contain tinctures or tiny pilules. Preparations for external use are housed in larger bottles in the drawer at the base. The only

Medicine chest from Apothecaries' Hall, c. 1820

Towards the middle of the nineteenth century a new system of medical treatment, homeopathy, was brought to this country by Dr Quinn, a disciple and contemporary of Dr Samuel Hahnemann, a German physician and chemist who published his views in 1796. His theories derived from age-old "treat like with like" principles in existence since

apparatus required is either a bent glass rod for "dropping the tinctures" or a metal scoop for extracting the pilules. The rods or scoops are found in slots in the leather lid-lining where "books" of Calendula and Arnica plasters are also frequently found. As this was an entirely new method of treatment a "Vade Mecum" or book of instructions was

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supplied with the chest. The gentler homeopathic approach had much appeal in this era of heroic treatments and the statistics of its success were impressive. At the time of the 1854 cholera epidemic the mortality rate in the London Homeopathic Hospital (founded by Dr Quinn in 1850) was 16.4% in marked contrast to the rate of 50% in the other London hospitals.(14)

With the revolutions in the latter part of the nineteenth century in the fields of industry, medicine, pharmacy, transport and communication, the need for ''home-pharmacies'' diminished. Leather wallets and chests of japanned tin were still produced (mainly by Burroughs Wellcome) until well into this century for travellers and explorers, but these contained prepared remedies in tablet form and were therefore less bulky than the heavy nineteenth century wooden medicine chests.

It is of course impossible to know how much use was made of the contents of medicine chests. Many boxes, and most surviving instruction books, do appear to have been well used. Also one feels the fact that so many chemists and druggists supplied chests, and advertised re-fitting facilities, means that they were not regarded merely as ornaments.

Home pharmacies (Hausapotheken) and travelling medicine chests (Reiseapotheken) from the seventeenth century and later are displayed in museums on the Continent. The German National Museum in Nuremburg and the Pharmacy Museum in Basel for example have exquisite examples. One sixteenth century Italian chest however is nearer to hand, being on view in the Wellcome Galleries at the Science Museum. This is a huge chest which would have needed two men to lift, and was made for the Guistiani family.(15) It is probably the most beautiful and almost certainly the earliest medicine chest on view in the world.

Although with hindsight we know that many of the remedies contained in the Guistiani chest, and indeed in the English nineteenth century chests, are of dubious value or are harmful, perhaps it helped suffering patients a little to have their medication dispensed from such beautiful objects.

Chest by Taylor Bros. of London, c. 1860

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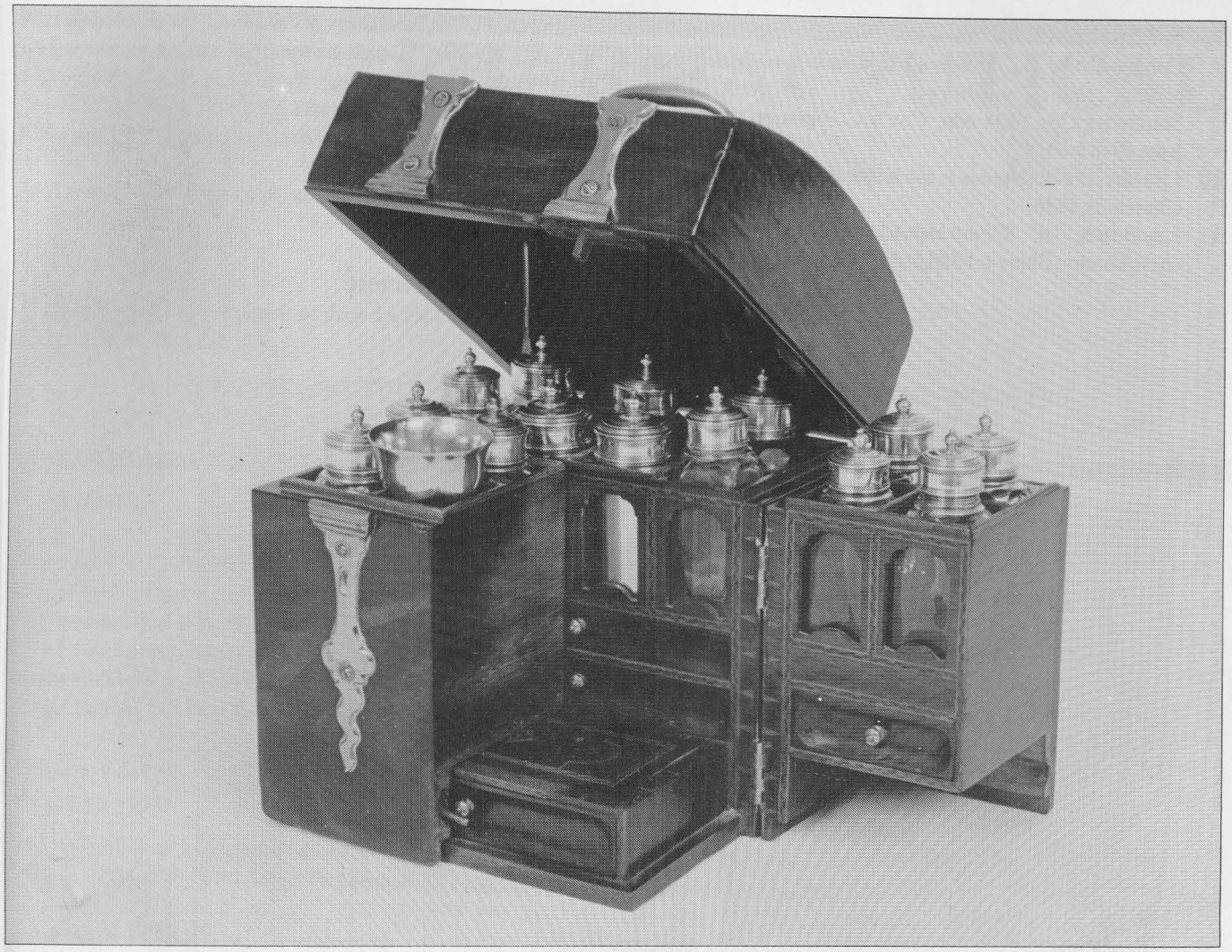


18th century Continental chest

Notes and References.

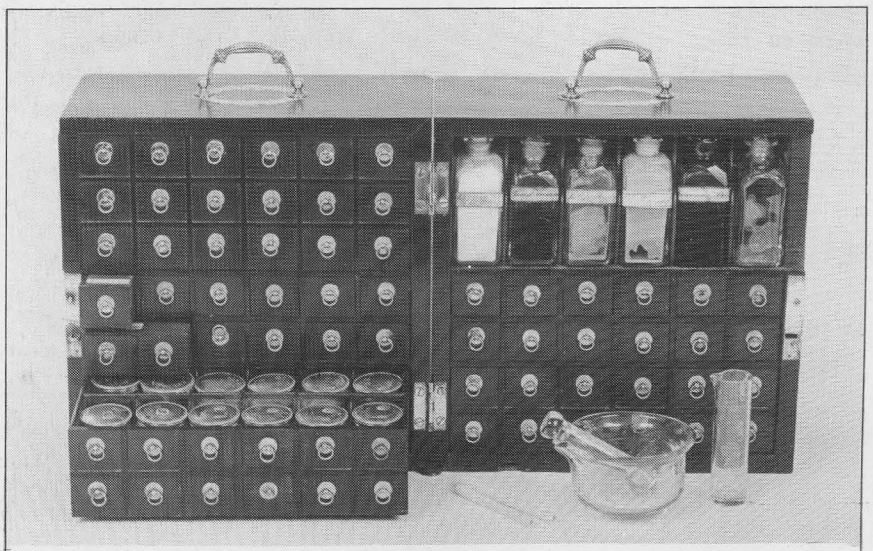
1. In Germany,in the 17th.and 18th.centuries there were plague mandates that made it compulsory for households to keeptheir own supplies of medicine. See C.Habrich,''Die Aus-stattung von Haus-und Reiseapotheken in ihrer Pharmazieund Medizinhistorischen Bedeutung'', *Pharm.Zeit.*,vol.124 No.24,1979.
2. For an illustration of a military chest see *A Prooved Practice for all young Chirurgians,* by W.Clowes.
3. Trade card of Thomas White, chemist & druggist of 24, Cornhill,London, 1839, with illustrations of three medicine chests incorporated in the design.
4. Lists of chemist and druggists' labels on medicine chest bottles supplied by courtesy of the Wellcome Institute.
5. A popular kitchen-physic reference book was that of N. Culpepper, *The English Physician Enlarged...*,1653; Elizabeth Grey, Countess of Kent, *A Choice Manuel or rare and select secrets in Physick & Chyrurgery...and most exquisite ways of Preserving,Conserving,Candying etc.*, London, 1653, is an example on household management; for an excellent account of extant hand written books see, D.G.Nagy, *Popular medicine in 17th.century England* Chap.5, Ohio,1988.
6. Dr Tissot, *Advice to the people in general with regardto their health*, Dublin,J.Hoey,1766.; W. Buchan, *Domestic Medicine or a Treatise on the prevention & cure of diseases*, London,1769,9th.edn.
7. H.Smith, *The Family Physician being a collection of useful family remedies*,London,1760.
8. R.Reece, *A practical dictionary of domestic medicine,* London, Longman,1808; *A Catalogue of drugs* ...,London 1836, 15th.edn.; *The medical guide for the use of clergy, heads of families* ...,London,1820,13th.edn.

https://doi.org/10.24355/dbbs.084-201803060826

9. Perhaps the most frequently used guide was *A Companion to the medicine chest with plain rules for taking the medicines,* by an M.R.C.S., Southwark,Cox,1824 edn. Cox's Companion ran to at least 49 printings
10. J.Savory, *A Companion to the medicine chest...*,London, Churchills,1836.
11. J.A.Bond, *A Companion to the medicine chest,* London,Shaw c.1820,3rd.edn.,is an example.
12. H.Richards, *Instructions ...the family chest,* London,1808.
13. J.K.Crellin,'' Domestic medicine chests: Microcosms of 18th. and 19th.century medical practice'',*Pharmacy in History,* 1979,vol.21,pp.122–131.
14. B.Inglis, *Natural medicine,* London, Collins,1979, pp. 48–9.
15. J.Burnett, ''The Guistiani medicine chest'', *Med.Hist.,* 1982,vol.26,pp.325–333.

Acknowledgement:

For the illustrations I wish to thank my son,John Young.



Contents Large Medicine Chest c. 1780

LARGE BOTTLES

Spirit Hartshorn
Opoldeldoc
Castor oil
Paregoric Elixir
Rochelle salts
Bark powder
Tinct. Bark
Calcined Magnesia
Tinct. Rhubarb
Tinct. Myrrh

SMALL BOTTLES

Salts of Wormwood
Lavendar Drops
Sp. Sal Volatile
Jalap powder
Paregoric Elixir
Antimonal wine
Ipecachuana wine
Goulard

SILVER TOPPED BOTTLES
contents engraved on lids

Cream of Tartar in 2 bottles
Bark
Purified Nitre
Rhubarb in 2 bottles
Testaceous powder
Salt of Wormwood
Gasgoign's powder
Magnesia in 2 bottles
Salts of Hartshorn

APPARATUS

Glass pestle & mortar
Glass measure (fl.oz. & drams)
Medicine glass (table & tea spoons)
Marble pill tile
Spatula
Scales with silver pans
Apothecaries' weights
Roll of chamois leather
Assorted ivory tubes (? for enemas)
Silver funnel

THE DRAWERS

Diachylon plaster
Blister plaster
Basilic powder
Aloes
Nitre
Sugar of lime
White vitriol
Blue vitriol
Manna *
Dr James' powder
Calomel
Senna leaves
Linseeds
Gum Arabic

* Manna - Laxative Saccharine exudate of a Mediterranean plant - FRAXINUS ORNUS LINNE Its main constitutent, Mannite, oxidises to Mannose - a fermentable sugar

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Contents.

Diary Dates.

10 March 1993.

The Foundation Lecture. Vice-Admiral Sir James Watt, ''Medical Aspects of the Long Voyages of Exploration.''

2 - 4 April 1993.

The Spring Conference at Plymouth.

The British Pharmaceutical Conference, Birmingham. History of Pharmacy Session. 9 September 1992.

This year the BSHP for the first time had a stand which was continuously manned throughout the Conference. Six new members were enrolled and a numbers of publications sold. Surprising and revealing were the number of delegates previously unaware of BSHP's existence, highlighting the need for more publicity.

In his paper ''The Magic of Pharmacy'' Mr Clive Murray described how his interest in the history of pharmacy was awakened when he went to work in his father's shop in 1950. This contained a considerable number of artefacts his father had purchased in 1942 for £70,which had come from a pharmacy in Cleobury Mortimer,Shropshire. In 1840 this village pharmacy had belonged to Edwin Paul Evans. He was succeeded by his son Edward Easthope Evans who had qualified in 1869. Although Edward did not die until 1921, the shop was closed in 1909, although not sold, another pharmacist supplying the needs of the village from other premises. Thus the elder Mr Murray was able to buy a wide range of items dating from the late eighteenth to the early twentieth century.

Dr. Worling presenting his thesis
Photograph: The Pharmaceutical Journal.

1848

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Books included a *Pharmaceutical Journal Formulary* for 1907 (price 10s.6d.) and a dispensing book with many entries for the local gentry. They were not always eager to settle their bills promptly, one account for 4s.6d. only being paid two years after presentation. A stock book showed that he had kept both speckled and green leeches, and unfamiliar items such as sponge lozenges and tripoli, described by Gray as ''The clunch,or curl stone of the Staffordshire mines calcined: [which] gives gold and silver a beautiful black lustre.)

Among the drugs was a jar of Ext.Opii labelled with the retail price of 6d.per ounce. There were many interesting storage containers including two specie jars, a good run of labelled eighteenth century glass bottles, some unusual square cobalt blue stock bottles which had horizontal ribbing, and some saltglaze pots, 7 cms.high,impressed ''E.P.EVANS/ Chemist/ Cleobury Mortimer.'' These had been made by William Powell at the Temple Gate Pottery in Bristol, famous for the glaze he invented in 1835 and later used by most manufacturers of this type of ware.

The Cleobury Mortimer Pharmacy

After tea, Dr Peter Worling presented a copy of this doctoral thesis, ''Pharmaceutical Wholesale Distribution'' to the President,Mr W.A.Jackson, for the Society's library. In a short address, Dr Worling pointed out that although the history of several major manufacturing and wholesale chemists had been documented little work had been done on wholesale distribution in general. There was not even a comprehensive list of wholesale chemists to which one could refer. In addition there must be considerable historical information available in theses, a source but rarely consulted as there was no general index of them. He hoped that by making his own thesis readily available to BSHP members it would stimulate research into the subject.

The last part of the session consisted of a pharmaceutical antiques road show. The first item discussed was a box with a hinged lid holding six ampoules made from glass tubing and sealed by hand at each end. Each contained a different drug and were presumably for emergency use. They were of French manufacture and probably dated from the end of the nineteenth century. Other objects were an adjustable powder folder, a small hand-made glass, flask-shaped male urinal with rough pontil and folded rim from the first half of the nineteenth century, a blue glass pocket sputum bottle with a metal cap at each end, and an unusual portable fumigator designed for use with paraformaldehyde tablets. The final object was a rare ''milchglas'' bears' grease jar without a lid, decorated in black with four bears in a wild landscape, which was probably made in Central Europe about 1800.

W.A.Jackson.

Useful Documents.

Mr Nigel Tallis, assistant curator of the Pharmaceutical Society's museum, has written to tell us that the prescription books of Hickman & Son Ltd.,Newbury (56 volumes,1901-1905, 1914-1979) have recently been deposited by the owners with Berkshire Record Office. Accession number,5056.

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PHARMACEUTICAL WHOLESALING – an Historical Perspective.

Dr Peter M.Worling.

Features which we single out from today's wholesale service such as comprehensive stocks, emergency deliveries and credit for the pharmacist opening a new pharmacy, were all in operation several hundred years ago. Present day wholesaling and the distribution of medicines are in some ways a different activity from the early services available but in other ways they have stayed much the same over the centuries.

In this examination of wholesaling I have selected three separate moments in time. These are,the beginnings of wholesaling, the changes that took place in the period 1750 to 1850, and the influence of the introduction of the National Health Service. These three periods set the pattern for the time that followed and were major steps in arriving at the service we have today. Wholesaling is a response to a demand for a product group in reasonable volume, and so reflects product demand, the pattern and movement of population, and the transport available.

The First Wholesaler.

In mediaeval England the population was mainly rural and relied for its medicine on the herbs of the countryside and the folk remedies handed down from Saxon times. Superstition also played a large part. Even up to the sixteenth century medicine relied on a vegetable pharmacopoeia supplemented with the odd viper or toad, whilst treatment was mainly purging and bleeding. In the twelfth century there was renewed contact with Mediterranean Europe and the Arab world which stimulated medical knowledge. This coincided with the founding of the burghs in which merchants and tradesmen were given specific rights to support internal and external trade.

This growth of centres of population meant that townsfolk no longer had easy access to the herbs of the countryside. The more prosperous could afford to go to an apothecary who still made up his medicines from the indigenous herbs, but also came to rely on items such as asafoetida, aloes and dragon's blood imported by the pepperers and wholesale spicers. The stock in trade of the spicer is recorded as being crude drugs,prepared medicines,sweetmeats,sugar,rice,dried and candied fruits, perfumes,vegetable and animal dyestuffs,a limited number of inorganic chemicals,cotton thread,silk and paper.This indicates that there was some form of distribution from early times and was established by the eleventh and twelfth centuries.

All of this has to be put into context. Even sixteenth century England with a population of 2.5 millions had little interest in communications. The upkeep of the roads was the responsibility of the parish and were largely neglected. There were some arterial routes which stretched out from London to Dover,Plymouth,Bristol,Chester and Berwick for Government communications,although even these had some difficult sections. The smaller roads were mere tracks, impassable by foot in winter.

On the highways there were well equipped inns. Post horses could be hired at 3d. per miles plus 6d. for the post boy who rode the horse back to the previous stage. The traveller had to contend with the gangs of desperadoes who infested the lonely parts of the route. Carts and coaches were available but were unsprung,and later in the towns,the sedan chair came into its own as the best mode of travel.

The wholesale market was small. In Norwich in 1525, then the second city in England with a population of 13,000, there were no physicians, surgeons or apothecaries although there were fifteen barbers; by 1569 there were three surgeons and two apothecaries. However there was continued growth and Trease has placed the first recorded reference to a wholesaler as 1415 when an inventory was taken of the contents of the shop and dwelling of John Hexham,a London apothecary. It lists 92 items of which 79 were pharmaceutical together with a still and the household items. There were several ''divers waters'' listed which could have been produced in the still, but many of the other compounded items could not have been made on the premises because there is no mention of a mortar, pestle, weights or balance. There was also a range of syrups in stock, but no sugar, consequently many of these items must have been obtained from a wholesale apothecary.

The import of drugs and spices at first was largely carried out by Italians. During the fifteenth century trade with the Mediterranean continued to expand with an increase in the export of wool, spices and drugs being brought back as a return cargo. Eventually the London merchants squeezed out the Italian traders. Throughout the sixteenth and seventeenth centuries trade expanded, new remedies were introduced so that the product range widened. Hutton in *De Morbo Gallico* recommended guaiacum in the treatment of syphilis, and later sarsaparilla and china root were also imported for the treatment of venereal diseases.

In 1600 the East India Company was formed to trade with the Moluccas or Spice Islands. Only 14% of the drugs used in 1588 were imported from outside Europe but by 1669 this had increased to 70% and were mainly from the East Indies and India. Most of these imports came into Mincing Lane, London, and were sold to the wholesale druggists who repacked them into smaller quantities for apothecaries in town and rural areas.

The Wholesale Service.

By the early eighteenth century the wholesale service was well established the goods being sent out to customers by

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carrier. Also many country apothecaries could purchase supplies from wholesalers when they made their visits to the many town fairs.

A number of credit schemes were on offer. Some apothecaries were members of rich families who would have found no difficulty in funding opening stocks, but others who did not have a wealthy background would have found it very difficult after a long apprenticeship to have found the necessary finance. Normally the goods required for initial stocks could be obtained on a down payment with the balance being paid over a period of two months to a year. Current stocks could be obtained by paying half the purchase price and the balance on negotiated credit terms.

We can get some idea of the service offered by William Jones, a druggist,whose accounts have been studied by Watson. It was in 1757 that Jones took over the business of Elim Walter at 24,Great Russell Street,London. Jones' practice was to make a journey twice each year in order to visit his customers. He travelled through the Midlands as far as Chester, and then back through the western counties, during which time his shop was looked after by his son. He had a wide range of drugs and chemicals in stock, and the following are some examples supplied between 1757 and 1789: Aq.Rosae,Aq.Flor.Aurant.,Acet. Distillet.,Bals. Locat.,Benzoin,Cera Alb.,Bals.Capiri.,Crem.Tartar., Pulv. Elemi, Bals. Gilead, Bals. Copaibi, Fol.Senna, Gum.ArabOpt., Pulv.Curcum., Merc.Corros.Sub.,Tartar Emetic, Ol.Ric. Opt., Cassia Fistula, Rad. Angelica,Ol. Lavand. Ang., Ext.Thebaiae,Rad.Rhei Co., Rad.Ipecac., Ol.Juniper,Ol.Oregan.,Ess.Limon.Opt.,Ess. Bergamot. Opt., Ol.Vitriol., Spt.Tereb. Aeth., Sapo. Castille.

His customers were surgeons and apothecaries, some with their own business and some attached to hospitals. He delivered supplies to hospitals in Chester, Hereford, Salisbury and Stafford,as well as those in London. In between visits, orders were sent by carrier to London and the goods brought back on the next delivery. This took about a week each way. There was in addition an urgent delivery service by coach. There is a record of such a delivery on 28 November 1781 to Mr Sale an apothecary who had written for "one or two dozen but not more of live vipers which we are very much in want of."

Jones made many of his own preparations and he also supplied his own specialities including Tincture of Peruvian Bark. One of his suppliers was the London Apothecaries' Company, and another Mr Pestle and Mr Proston at Stratford from whom he obtained Syrup of Violets.

After 1750.

During the next hundred years there was a continual expansion of the wholesale service. Most of the wholesale companies that were trading in 1950 were formed around this time. There was freedom from the major epidemics which had occurred regularly since 1348, and the population increased rapidly, doubling during the seventy year period 1750 to 1820. Owing to the Industrial Revolution, people migrated into the towns,and an increase in the demand for drugs and medicines gave new opportunities for the wholesaler.

At the beginning of this period many wholesale houses were established in London which supplied the centres of population. There was a thriving export and import trade over well established sea routes and a regular coastal shipping trade with Scotland and the North. The population of England and Wales was six million, and that of Scotland,a million at the Union of the Crowns in 1707, had risen to one and a quarter million by 1750, half of which lived north of the Tay,and one quarter in the five Highland counties. Only 10% to 15% lived in urban areas

Most of Scotland had only drove roads which were suitable for cattle and tough ponies loaded with panniers or saddle bags but not for carts. There were some long distance routes. Carts could be taken from Glasgow to Edinburgh via Stirling and Bo'ness, and from Glasgow to Paisley. There was also a route from Leith to the Lanarkshire lead mines through Biggar, and another from Edinburgh to Haddington and Dunbar. A nobleman could use his coach to Fife in dry weather but north of the Tay,not even the King's Way from Dundee to Brechin, was passable by coach.

Wholesale supplies came north from London by ship and then went on by cart or mule train. Details are to be found in the Fochabers Papers, a collection of accounts for drugs supplied to Francis Gordon, a surgeon in Fochabers, Morayshire. The wholesalers were Robert Carter, wholesale druggist of London, James Webster,druggist at Ye Red Cross,Leadenhall Street,

London, and Straton & Co.,chymist & druggists,West Smithfield, London. The items listed include ipecachuana root, tacamahac (a gum resin from *Populus balsamifera*),Socotrine Aloes, Hungary Water, calcined hartshorn and jalap root. The captain of the vessel gave the wholesaler a receipt for the goods in his charge and payment was made either through merchants in Aberdeen or London.

Conditions changed slowly. Roads improved,particularly after the introduction of the turnpike system which charged for their upkeep, and so the network of carriers improved. By 1780 Leicester was the junction for weekly deliveries from London, Leeds,Manchester and Birmingham. Goods from any of these points were transferred on arrival to the outgoing wagon so that regular deliveries were maintained. During the next fifty years, services were developed to Bristol,Birmingham, Nottingham, Stamford and Cambridge. Supplementing this were the local carriers who served the outlying districts by pack horse train on the roads impassable for wagons. By 1835 *Rowson's London Directory* listed over 14,000 regular wagon services throughout the country. The railway network was just being established and in time came to supplant the carrier network.

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The Origins of the Modern Wholesaler.

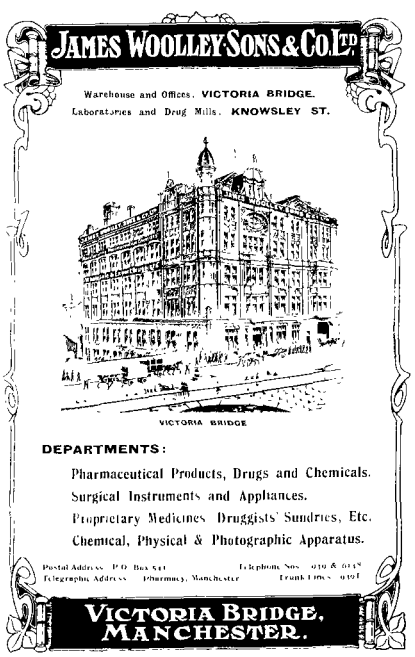
The origins of a great many pharmaceutical companies in business today, as well as pharmaceutical wholesalers may be traced back to four starting points:

Retail Chemists and Druggists.

A number of wholesalers trace their establishment back to a retail chemist's or druggist's business. Most followed a similar pattern of starting by supplying products locally and then branching out, thus increasing the area covered. This was followed by small scale manufacturing and then becoming totally involved as a manufacturing and wholesale chemist.

One example which is frequently mentioned is Allen & Hanbury's founded by Silvanus Bevan in 1715 at the Old Plough Court Pharmacy. The company was involved at a very early stage in manufacturing and distributing galenical products. As the demand increased machinery was installed to manufacture ointment and pills. Not only could these be made more cheaply in bulk but the quality of products made on a larger scale was more consistent, so that the preparation of many of the more frequently used products moved from the pharmacy to the manufacturing house. This was particularly the case when more difficult processes,such as vacuum distillation for the preparation of extracts,were introduced. Allen & Hanbury's were one of the first companies to install this equipment in 1817.

There were other companies who followed the same route. Messrs.E.H.Butler & Son Ltd.of Leicester was established in 1827 by John Butler in Wharf Street as a retail pharmacy. A service was slowly built up of supplying drugs and chemicals to chemists in the Midlands as well as running the pharmacy. In 1869 this business had grown to the extent that new premises had to be built. As the market changed Butler's kept up-to-date by adding ranges of patent medicines, and then ethical pharmaceuticals, so that the company successfully made the transition to a comprehensive pharmaceutical wholesaler.



Similarly James Woolley & Co. was first established in 1796 by R.H.Hargreaves as a pharmacty in Market Stead Lane,Manchester. By 1850 the company was well established as a wholesale and manufacturing chemist,making many preparations and stocking a very wide range of sundries and surgical instruments which were supplied to doctors and hospitals.

Drug Growers and Importers.

The second group consists of those wholesalers who developed from the drug importers and growers. Stafford Allen,a nephew of William Allen of Allen & Hanbury's, founded May & Allen in 1843 with his partner Charles May. When May retired, George Allen, Stafford's brother, joined the company and the name was changed to Stafford & George Allen. Its main interest was the preparation and distribution of standard drugs and essences. They were also important drug grinders with mills in London, and cultivators of many plants at their farm in Long Melford, Suffolk. Stafford Allen's supplied their products both directly and through other wholesalers. The company increased its interests in perfumes and essences but did not make the transition to becoming a pharmaceutical wholesaler with a wide range in the fifties.

There were many other companies engaged in the import of drugs. Two further examples are, Baiss Brothers of 102,Leadenhall Street,formed in 1833 by W.Arnold Baiss and his brother James who joined with Gale & Co. in 1934 to form Gale,Baiss & Co.Ltd.,and Warrick Brothers Ltd.of 6,Nile Street,City Road,founded in 1827 by John Warrick as an importer of foreign drugs and chemicals. Subsequently Warrick's acquired the lozenge business of Lucas Brothers in 1877, and took an interest in perfumery, one branch of the family starting a perfume factory in Nice. These companies however changed their interests and did not develop into comprehensive wholesalers.

Chemical Manufacturers and Suppliers.

With the growing use of chemicals in medicine and the later use of organic chemicals there were a number of companies who specialised in their manufacture and their importation. Howard's of Ilford established by Luke Howard in 1809, May & Baker founded in 1834 by John May and William Baker as the continuation of a business started in 1794 are well known. These companies had their heyday from around the beginning of this century up to 1950 when bismuth salts and antacids were being used in large quantities. One of the few companies to move into wholesaling was T.& H.Smith. They became significant fine chemical manufacturers but also branched into wholesaling with depots in Edinburgh and Glasgow,subsequently becoming part of Vestric Ltd.

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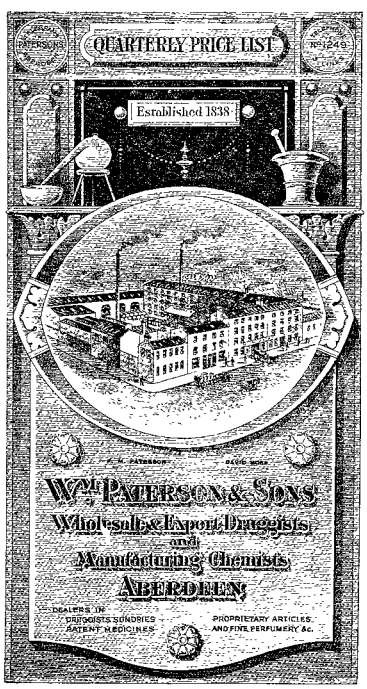
Proprietary Medicine Wholesalers and Druggists' Sundriesmen.

The fourth group from which wholesalers evolved was those companies which were originally formed to distribute the growing range of patent medicines and sundries. There are a number of well known names. Barclay & Son was formed in 1770 by James Barclay as a warehouse for supplying proprietary medicines. Over the years the stock range was extended, druggists' sundries were added, and when photography became a popular hobby with supplies being purchased through pharmacies, they were very successful in taking a share of this business. It ultimately became a comprehensive pharmaceutical wholesaler.

Other companies which followed a similar path in its early stages were, S.Maw & Sons, and Sangers. Maw of course did not follow the route to becoming a full scale wholesaler while Sangers did.

Wholesalers in Scotland.

There was a similar pattern in Scotland. Duncan Flockhart & Co. of Edinburgh was founded by John Duncan,an apothecary who opened a business at 52,North Bridge in 1820,and William Paterson & Sons of Aberdeen which had been founded by William Paterson, a chemist. Paterson had opened his first business in Stonehaven but then took over an established retail and wholesale business in Broad Street,Aberdeen. T.& H. Smith was started by a Dr Thomas Smith who took over a chemist and druggist's shop at 61,The Pleasance,Edinburgh.



There are three companies which were the exception to this pattern and all are of interest. Raimes,Clarke & Co. was founded in Edinburgh in 1816 by two Yorkshiremen, John and Richard Raimes. John after serving an apprenticeship in York went to sea as a doctor, whilst Richard was engaged in selling drugs and preparations in the north of England and Scotland. He travelled around the area with his stock of drugs, spices, ointments and liniments in saddle bags. At that time there was no manufacturing pharmaceutical business in Edinburgh, so it is likely that the two Raimes brothers saw the potential for such a firm in the city.

The Glasgow Apothecaries Company was formed by a group of medical practitioners in Glasgow in 1805 in Wilson Court, 29,Argyle Street. These doctors, believed to be twelve in number,concerned that most of their prescriptions were being dispensed at shops owned by other doctors, decided that the solution was to open their own business. It was not long before other doctors and chemists in the area used the company and a wholesale department was opened.

The New Apothecaries Company was established in 1824 in similar circumstances by seven well known physicians including Professor Rainey. The premises were in Glassford Street, Glasgow, and the first manager was William Greig who had served his apprenticeship with the Glasgow Apothecaries Company. The New Apothecaries was subsequently owned and managed by four generations of Greigs before it was sold to Evans Medical.

Improvements between 1850 and 1950.

There were changes during the next hundred years, but by about 1850 the wholesale service in Britain was well established in a form that would endure until 1950. Wholesalers carried a wide range of drugs and galenicals. The drugs were bought in bulk from growers and importers and then re-packed into smaller quantities to supply chemists' orders. They also manufactured a wide range of galenicals,although in time this was taken over by the major galenical manufacturers.

The physical distribution of orders improved steadily. At first wholesalers depended on the network of local carriers to deliver orders outside their own van areas, but in time the growing railway system was used by manufacturers for delivery to wholesalers, and by the latter to supply their customers. In 1879 Sangers of London offered a daily delivery by their own van within a radius of two miles from Marble Arch. Heavy goods were delivered on alternate evenings starting from about 5 p.m. In the suburbs a daily delivery service was offered by the London Parcels Delivery Company. Barclays of Farringdon Street,London, in 1895 were giving a similar service by using three different carriers.

Paterson's informed their customers in 1898 that items not in stock could be obtained by daily despatch from London. Telegraphic and urgent orders were sent by the quickest route which was often by the railway parcel service. In 1913 Paterson's had to mention that orders received in the afternoon might be held over to the next day because the railway companies were refusing to accept goods after 5.30 p.m.

Sangers in Euston Road celebrated their centenary in 1914, by which time they were dispatching 2,000 orders received by post and telephone on the day of receipt. Speed of service

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and a keen price was their slogan and many orders were assembled and despatched within half an hour. The delivery fleet consisted of seven motor vans and ten horse drawn vans together with a number of carrier bicycles which were used to collect special items from London manufacturers.

From about 1920 onwards, motor vehicles began to be used extensively for deliveries in the town although they were not considered to be reliable. It was a long time before they were the sole means of transport. In 1946 Paterson's were still delivering heavy goods by horse and cart,while messenger boys were used for urgent town deliveries.

During the long period from about 1790 to 1850 the wholesalers steadily grew and improved their service. There were difficulties, price cutting was always a problem and frequently raised at wholesalers' meetings. Competition was also a matter of concern. The Scottish wholesalers were incensed by cut-price offers made to their customers from England, but the impression is that there were strong local loyalties and business was stable.

All this was to come to an end after 1950.

Changes after 1950

The service in 1946 was little changed from the beginning of the century,though transport was more reliable and motor vehicles were in general use even if most of them dated to before 1939. Wholesalers carried an extensive stock of drugs,galenicals,ointments,powders and tablets. The process of buying bulk and re-packing was little changed, many of the items on their lists having been there for the past 150 years.

In addition, wholesalers carried specialities, often of their own manufacture,and a range of sundries and dressings. Some companies, such as Ayrton Saunders and James Woolley, had extensive stocks of surgical instruments and surgical sundries which they supplied to doctors,hospitals and for export.

Patent medicines were stocked although there were still specialist wholesalers supplying these on a national basis. Ethical pharmaceuticals were listed, penicillin and the sulphonamides were available, but the total range of ethicals fitted into a small cupboard. During the next ten years the wholesale service was to undergo a revolution. Many companies would be closed by 1978 and the service completly changed.

There were three main factors.

The introduction of the National Health Service dramatically enlarged the size of the wholesalers' market, and the ever increasing number of research based medicines replacing the older drugs and galenicals made it impossible for the average pharmacist to finance stocks of all those available, so that he looked to the wholesaler to supply his needs promptly. These conditions created the third factor, namely increased competition.

Up to this time wholesalers operated mainly in fairly small geographical areas, although the major drug houses,British Drug Houses and Evans Medical,had been increasing the number of their depots to secure distribution of their standard drugs. Deliveries were daily in towns but often only once or twice a week in the country, supported by bus and train parcels for urgent items.

Macarthy's is credited with introducing the first same day ethical van delivery service and soon they were moving out to compete with wholesalers in other areas. This threat was responded to quickly by the introduction of their own fast ethical services, at the same time expanding their stock range, either into ethicals if they had been sundries houses like Sangers, or into sundries if they were wholesale and manufacturing chemists.

The extra work and cost which the daily service created, together with the increased stock range,almost overwhelmed the wholesale system so that deliveries fell behind in many areas. In time these problems were overcome. New systems were introduced, at first based on punched cards, and then on computers so forming the basis of the service we know today.

The increasing competition led in time to price cutting and the collapse of price maintenance at the wholesale level. This put further pressure on many companies originally formed in the expansion period of 1780 to 1850 who then became unable to make the transition to a comprehensive pharmaceutical wholesaler. As a result,either they closed or were absorbed into a larger concern.

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The two Johns: Channing and Pringle.

Readers of the *Pharmaceutical Historian* may recollect the two papers,''John Channing,Arabist and Apothecary'' (J.Burnby,Vol.18 No.4) and ''Sir John Pringle and the apothecaries''(C.Gordon,Vol.19,No.4). Shortly before his death Charles Gordon discovered that there was a link between the two men.

John Pringle (1707–1782),as with many educated men of his age,took a keen interest in Hebrew studies and informed comments on obscure passages and prophecies in the Bible. In early 1772 he was in communication with Johann David Michaelis,a professor at the University of Göttingen. Michaelis had made a deep study of the Old Testament using his exceptional knowledge of Syriac, Chaldean, Hebrew, and Arabic, besides the more usual Greek and Latin. He sent Pringle a number of letters in Latin in which he enquired into the true import of the ''Vision'' known as Daniel's ''Prophecy of Seventy Weeks''.

It was agreed between the two men that these epistles should be published in England, an undertaking in which Pringle agreed to act as editor. ''In consequence of which'', Pringle wrote to Michaelis,''I have employed a bookseller, Mr Cadell,in the Strand, whom I know,and one of the two mentioned by the Bishop.(1) As for the printer we had scarce any choice for there is only one press proper for works of that nature,viz. that of Bowyer and Nicholls in Company, whereof the former is the late editor of the Greek Testament with conjectures... and the Bishop was so good as to add,if Bowyer,who is a Hebraist, would undertake the first proof of the sheets,he would engage for the revisal only, but would not answer for any of the Arabic words ....''(2)

It was here that Pringle was presented with his biggest problem. Later in this letter of 23 March 1772, Pringle wrote,''Since that interview a very proper person for the Arabic has been suggested to me, one Mr Channing, an apothecary indeed but of an uncommon learning in the eastern languages who has published Rhazes' *de Variolis* in the Arabic with a new version in Latin which has been generally esteemed.''

Pringle went to the house of Bowyer and Nichols where he decided upon the column width and the lettering, a specimen of which he enclosed for Michaelis. He had not seen Bowyer as he was ill but Nichols told him,''that if Bowyer and Channing would undertake the revisal of the sheets there would be occasion for no other orientalist to correct them.''

It was Pringle's habit often to add interesting snippets of information in the post script. On this occasion, he told Michaelis that Banks and Solander with Captain Cook were to set out on a new expedition,''and I believe will sail by the middle of April. Be assured that there is no other view but to improve geography and other parts of natural knowledge. I ought to add indeed some political knowledge but only that of the most inoffensive kind, such as learning more of the manners and customs of the unknown parts of the world. They go first to the Cape of Good Hope and from thence are to make a dip towards the South Pole in that meridian taking Circumcision on their way, which lies in latitude 54. If a continent or ice hinders them from going further south, they are to sail eastwards around the globe in that latitude or as much to the south as they can, feeling for the *terra australis,* or at least for some more islands than they have yet seen. This Cape called Circumcision was first discovered in the year 1739 by two French ships who happened by storms to miss their way coming round the Cape of Good Hope. Mr Bouvet, one of the Commanders, left an account of the discovery, but his MS.has never been published. Mr Banks had it from Mr Delrymple who procured it from Paris when he was about his work concerning the new countries in the southern hemispheres.

They have allotted three summers to the voyage, passing the intermediate winters between the tropics either for refreshment among the delightful islands of that zone or making more researches there.''

On 5 June Pringle was telling Michaelis, ''Our apothecary I find is the most universal in the languages but then the subject is strange to him. However as he is otherwise a man of good sense and a scholar, I flatter myself that he, with the help of Mr Bowyer, the printer,will be able to carry on the work pretty well both in the absence of the Bishop and of me, as both of us propose to go to the country in a fortnight at furthest.''

By 28 August 1772, Pringle had received twelve sheets of the book which he was now sending on to Michaelis. ''I understand that our very learned apothecary, Mr Channing, has been very diligent but nevertheless, notwithstanding some assistance that he had from Mr Bowyer,the printer, likewise uncommonly learned, I dare to say that you will find faults enough to correct. I perceive, though I did not before you sent back the first leaf, an error which had escaped us all....'' Proof reading was no easier then than now!

He again comments on the explorers' activities, ''Messrs Banks and Solander being disappointed of their second circumnavigation this summer, thought proper to go upon a voyage to the Scotch Western Isles and, if the season will permit, to Iceland. Meanwhile Captain Cook has sailed on his grand tour as projected before.''

Pringle in November is waiting for the arrival of the third epistle ''to be put to the press'', and writes, ''Mr Bowyer,our printer,had taken a great deal of trouble. I told you before that he is the only learned man of his trade in England, but he is somewhat worn out from years and a stroke of the palsey. He is going through the whole impression to correct those errata which shows how much he valued the work which he not only read in MS. with great delight, but begged from me the sight of some other of your works....On the

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other hand he was not sure that Mr Channing, the learned apothecary, was entering sufficiently into the subject."

Channing appears not to have been interested in the minutiae of Biblical studies, he was furthermore an exceptionally busy man. From September 1771 to September 1772 he was Master of the London Society of Apothecaries and a member of three of the Society's standing committees.(3)

Pringle had by now roped in another helper for he writes, "I have also enclosed another line containing some other typographical corrections. They are,as you see, from Heberden, a gentleman eminent in our profession, ingenious and a general scholar with some knowledge of the Hebrew."(4)

By 14 December 1772 Pringle was becoming depressed at the number of errors which Michaelis was finding. "I was not a little ashamed of the immoderate number of errors you have detected ...though I myself was not personally concerned as understanding none of the oriental languages, and was absent most of the time, yet I had flattered you, after having flattered myself, that Messrs Channing and Bowyer would have performed the part of correctors sufficiently well. But I now see that as they are both grown old, [and] they were not equal to the task, which indeed, to do them justice must upon the whole have been none of the easiest.(5) I begin to repent of having ventured upon [this] undertaking ...."

Possibly Michaelis was something of a nit-picker because Pringle goes on to protest, "I find in one place you quarrel with the common comma being too near an Arabic word. That can be no difficulty to a reader of this country. As you will observe, in all our printing we place the several stops much closer to the word than they do anywhere beyond the seas."

It would seem also that Pringle had been somewhat premature in sending the proofs to Germany as on Christmas Day 1772 he wrote,"either Mr Bowyer or some of his friends" had anticipated Michaelis in some of the errors and had already made the necessary corrections. Nevertheless twelve leaves had to be cancelled and all the new work was now taken over by Dr Heberden in regard to the Hebrew words. They were however "still obliged to leave the Arabic words to Mr Channing, having no other person here sufficiently conversant in that language."

Dr Pringle had been also in the habit of altering Michaelis' punctuation,as "in general we use fewer commas than what you do and avoid putting two colons in one sentence." He had then passed the task on to John Channing, but he had thought that Michaelis' own punctuation should stand and so made no emendations. This caused further friction on all sides.

Nevertheless,the happy day arrived when all was completed, and on 9 February 1773 Pringle could write, "I have the pleasure to acquaint you that at last your letters are out of the press and I presume will be published this or next week." No doubt there were sighs of relief all round.

J.Burnby.
C.Gordon.

Notes and References.

1. All quotations are taken from J.G.Buhle,*Literarischer Briefwechsel,* 1794-96. The bishop of Oxford at this time was Robert Lowth (1710-1787) a Hebraist of European reputation. His chaplain and close friend was Benjamin Kennicott (1718-1783) who began in 1751 a critical examination of the Hebrew MSS of the Old Testament culminating in a one volume collection of his nine reports in 1770.
2. William Bowyer (1699-1777) was printer to both the Royal Society and the Society of Antiquaries. He had been a student at Cambridge but left in 1722 without a degree to join his father's printing firm. John Nichols of *Literary Anecdotes* and *Literary Illustrations* fame, became his partner in 1766.
3. For an excellent account of Channing's activities and busy life, see, E. Savage-Smith,"John Channing:Eighteenth-Century Apothecary and Arabist",*Pharm.in Hist.*1988.vol.30 pp.63-80.
4. William Heberden M.D.,(1710-1801) was also a student of the Bible and like Pringle a friend of Benjamin Kennicott
5. Channing died in 1775 aged 72; he was only four years older than Pringle.

Society Members' Activities.

Approximately eighty items, including a bubby pot,feeding bottles, pap boats, nipple shields, breast relievers and soothers from the private collection of Mr W.A Jackson are forming part of an international exhibition of objects associated with infant feeding at the Chateau de Quintin in Brittany. The exhibition runs from 13 June to 1 November 1992.

Geoffrey Miller,FPS, a member of BSHP living in Nedlands, Western Australia is a contributor of short pharmaceutical history articles to the *Australian Pharmacist.* He has written about bubby pots, cased medicine bottles and on Turner's Improved Homeopathic Medicine Cups. In the February 1992 number the subject was a homeopathic medicine chest in the possession of the Pharmaceutical Society of Western Australia. The chest is made of English oak and its contents were originally assembled around 1885 by Henry Turner & Co., homeopathic specialists of Fleet Street,London. Turner's appointed Edgar S.Wigg a bookseller, stationer and homeopathic chemist of Rundle Street and King Street, Adelaide as his agent.

The Pharmaceutical Society of Western Australia is currently celebrating its centenary, and an exhibition has been mounted in the Western Australia Museum, running from 26 August 1992 to 18 February 1993. For the exhibition Mr Miller has written an article on the foundation of the Western Australia Society and on some of its men of distinction, such as George Shenton (1811-1867),Edward William Mayhew (1855-1933), Oswald Hewlett Sargent (1880-1952) and Alfred Edwin Webster.

It may interest Mr Miller to know that George Shenton's pharmaceutical roots may be traced back into the mid-eighteenth century. Born in Winchester, Shenton was

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apprenticed to a chemist and druggist, William Bilton of Union Road, Portsea. Bilton was a north countryman and had started a six year apprenticeship in 1781 with a chemist and druggist in Low Ousegate, York, called John Wilkinson, whilst the latter in his turn had been bound in 1766 to another York druggist, James Wiggins. Wilkinson had at least five other apprentices, and eventually took John Cantley into partnership.

Two of our Dutch members have been busy publishing their work. Drs. A.I.Bierman and D.A.Wittop Koning with Dr M.J.Lieburg have written *Biografische index van Nederlandse apothekers tot 1867*, Erasmus Publications, Rotterdam,1992. *(A biographical index of Dutch apothecaries up to 1867.)*

Not content with this massive work Dr Bierman has written a guide to places of pharmaceutical history interest in Holland to celebrate the sesquicentenary of the Dutch Pharmaceutical Society, *Farmaceutische Reisgids voor Nederland,* Rotterdam, K.N.M.P.,1992. British readers will be relieved to know that there is an English insert, "Seven Centuries of Pharmacy in a Nutshell."

Fact, Fiction and Pharmaceutical History.

F.H.Rawlings.

Research into pharmaceutical history can be much like actively participating in a detective story with good leads finishing in dead ends, false trails, and essential clues discovered by chance. It also encourages and breeds the use of one's powers of logic and criticism. Published material has to be examined critically, do the assembled facts linked together in the article represent truth or fiction?

Let us take the case of the famous firm of Ferris & Co. of Bristol, earlier known as Fry,Gibbs & Ferris. On the occasion of its 200th. anniversary, the *Pharmaceutical Journal* wrote, "The company's history can be traced back to 1770 when a Quaker called Tilladam set up a pharmacy in Union Street, Bristol. He was succeeded by John Fry (my italics) who eventually took over the business from Tilladam's widow. In 1812, Fry took a Mr Gibbs into partnership and the firm became Fry,Gibbs & Ferris."(1)

More recently the story has been expanded. S.W.F.Holloway in his *Royal Pharmaceutical Society of Great Britain,1841-1991,* (p.45) has written, "The business originated in 1770 when Mr Tillendam (sic), a member of the Society of Friends, opened a shop in Union Street. After his death his widow carried on the business until her retirement early in the nineteenth century. She was succeeded by *John Fry* [my italics] another Quaker and a member of the famous family of cocoa and chocolate manufacturers. He had been apprenticed in 1782 for a premium of £63 to Thomas Sparkes, a druggist of Exeter in Devon. Under Fry's direction the shop flourished and additional premises in Castle Street had been acquired by 1796. Later he took into partnership Richard Ferris and James Gibbs, who had served an apprenticeship with his brother *William Fry,* [my italics] a Bristol distiller and druggist. The firm then became styled, Fry,Gibbs & Ferris."

Local history and detailed genealogy do not by any means confirm all the events quoted above. Firstly, the Bristol Council did not create and open Union and Dolphin Streets until 1776, whereupon John Till Adams,apothecary, was able to open his shop in the former street. On 25 September 1777, he married Ann Fry a daughter of William Fry,grocer, formerly of Castle Street but now of No.2,Dolphin Street. In 1780, Till Adams was awarded an M.D. of the University of Aberdeen, and died six years later on the 19th.February. *Bailey's Western and Midland Directory or Merchants' and Tradesmen's Companion* for 1783 relates that the practice of John Till Adams,M.D., of Union Street differed from that of most physicians and gave the following account. "Dr Till Adams dispenses the medicines which he prescribes,singly or in Consultation, but otherwise he neither dispenses, nor sells any. When he dispenses medicines, he does not expect the full fees of a Physician who merely prescribes, only some suitable Gratuity according to the Patient's Ability ...."

The rates books for this parish give the following names for the occupiers of the same premises in Union Street:

1776 - 1786	John Till Adams.
1787 - 1800	Ann Till Adams.
1802 - 1812	William Fry.
1813	No rate book available.
1814	Gibbs & Ferris.
1817	Fry,Gibbs & Co.
1819	Fry,Gibbs & Ferris.
1820 - 1822	Fry,Gibbs & Co.

Whilst the Bristol *Directories* give these details:

1783	John Till Adams Surgeon & Apothecary	Union St.
1787	Ann Till Adams Apothecary	Union St.
1792 - 1801	Ann Tilladams(sic) Druggist	Union St.
1805	William Fry Druggist	Union St.
1812 - 1813	Fry & Gibbs Druggists	3,Union St.
1814 - 1817	Fry,Gibbs & Ferris Druggists	3,Union St.
1818 - 1819	Fry,Gibbs & Ferris Druggists	4,Union St.
1820	Fry,Gibbs & Ferris Druggists Manufacturers of Improved Soda, Magnesia & Seidlitz Waters.	4,Union St.
1826	Fry,Ferris & Brown Chemists & Druggists	

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The questions now asked are who were William and John Fry, and what was their connection, if any, with the "chocolate Frys"?

The records at Friends' House, Euston Road, London, reveal that a William Fry,druggist,eldest son of John Plant Fry (I) grocer in Castle Street,Bristol,died in Union Street on 17 September 1812, aged 33. John Plant was the son of the late William Fry, and so the brother of Ann Till Adams,nee Fry. Young William was born in June 1779 and clearly when he was but 22 had taken over his aunt's pharmacy on her retirement in 1801,and had run it until his own untimely death. In 1804, he had taken as his apprentice for six years and a premium of £50,James Gibbs, who was eventually to follow him in the business.(2)

In spite of the fact that the *18th.century Medics* index gives a single entry for the William Fry,druggist, and the William Fry,distiller and wine merchant, who was of 102,Redcliffe Street,Bristol from 1775 to 1796, they can not be the same man.

The distiller had been bound in February 1761 to his father, also a William Fry and a distiller, eighteen years before the druggist was born.(3) William junior invested money in a glass bottle factory in which a Cornelius Fry had been a partner, apparently a sensible move for a distiller, but despite this business acumen,he was a bankrupt by 1796.(4) Cornelius Fry (1737–1818), a friend of the well known William Cookworthy, was a younger brother of Joseph Fry (1728–1787) the apothecary and chocolate manufacturer. According to *Bristol Glass* (1984,p.46) William the distiller and Cornelius were not related.

The connection of the pharmaceutical firm from 1777 to 1812 was not with the "chocolate Frys" but with the Frys who were grocers and soapmakers. The roots of the latter family have been traced back to beyond 1691 when a William Fry, the great,great grandfather of Ann Till Adams, dwelt in Ashgrove, Dorset. On emigrating to Bristol they became soap makers for several generations.

The other Frys, however originated with a Quaker family in Sutton Benger,Wiltshire. Joseph,apothecary and founder of J.S.Fry's, as well as having interests in type-founding,porcelain and soap manufacture, was the son and grandson of clothiers, John and Zephaniah Fry. He had been bound apprentice in 1743 for seven years to Henry Portsmouth, surgeon and apothecary of Basingstoke. Like his older cousin, another Zephaniah and clothier, he moved to Bristol to make his fortune as did so many West Country families. There he became a burgess in 1753 and took over the practice of Francis Freeman, a fellow Quaker and apothecary in Small Street. By 1758 or 1759 he had moved on to Wine street which in 1774 was divided into Wine Street and Narrow Wine Street caused by the intersection with the newly created Union Street. The 1775 *Directory* lists him as being at 8,Narrow Wine Street under the heading Fry & Vaughan, chocolate manufacturers. A year later the firm moved again, this time to 7,Union Street, very close to Ann Till Adams at No.3.

No records have been found to link the two Fry families who originated in different counties.

Re-drawn by R.A. Robinson

The next question posed is, who was the John Fry mentioned by both the *Pharmaceutical Journal* and by Holloway ? Surprisingly with such a common Christian name, there are few contenders. Certainly. according to the *Directories,* there was a John Fry, druggist, at 54,Castle Street in the years 1790 to 1795. In early 1792 he was in correspondence with a William Padley of Swansea who with his son Sylvanus was an ironmonger, wine and timber merchant and ships' chandler, and like John Fry, a Quaker. Amongst other business matters discussed, Fry was desirous of Padley hiring "a vessel of about 100–150 tons for a single voyage" to be laden with coal which, if it "answered" he would then "immediately agree for a very considerable Quantity" more.(5) Two years later he took an apprentice, Thomas Follett,for seven years, but by 1796 he had sold his druggist's business in Castle Street to John Chester.(6) The same year, a John Fry, almost certainly the same man, opened a brewhouse in nearby Queen Street, and was still there in 1805; by 1797 he was listed as being a maltster and brewer and owned a malthouse in Avon Street. He seems to have had no further connections with pharmacy.

It is probable that this particular John Fry was Joseph Fry's youngest brother born in 1736. The letter of 1792 gives every sign of being one from an astute business man of many years experience.

The only other possibility is the John born in March 1767 to the Cornelius Fry mentioned earlier. He would have been fifteen in 1782 and so is likely to have been the John Fry apprenticed in that year to Thomas Sparkes,druggist of Exeter, for seven years.(7) Although theoretically he could have opened the Castle Street druggist's business in 1790, it

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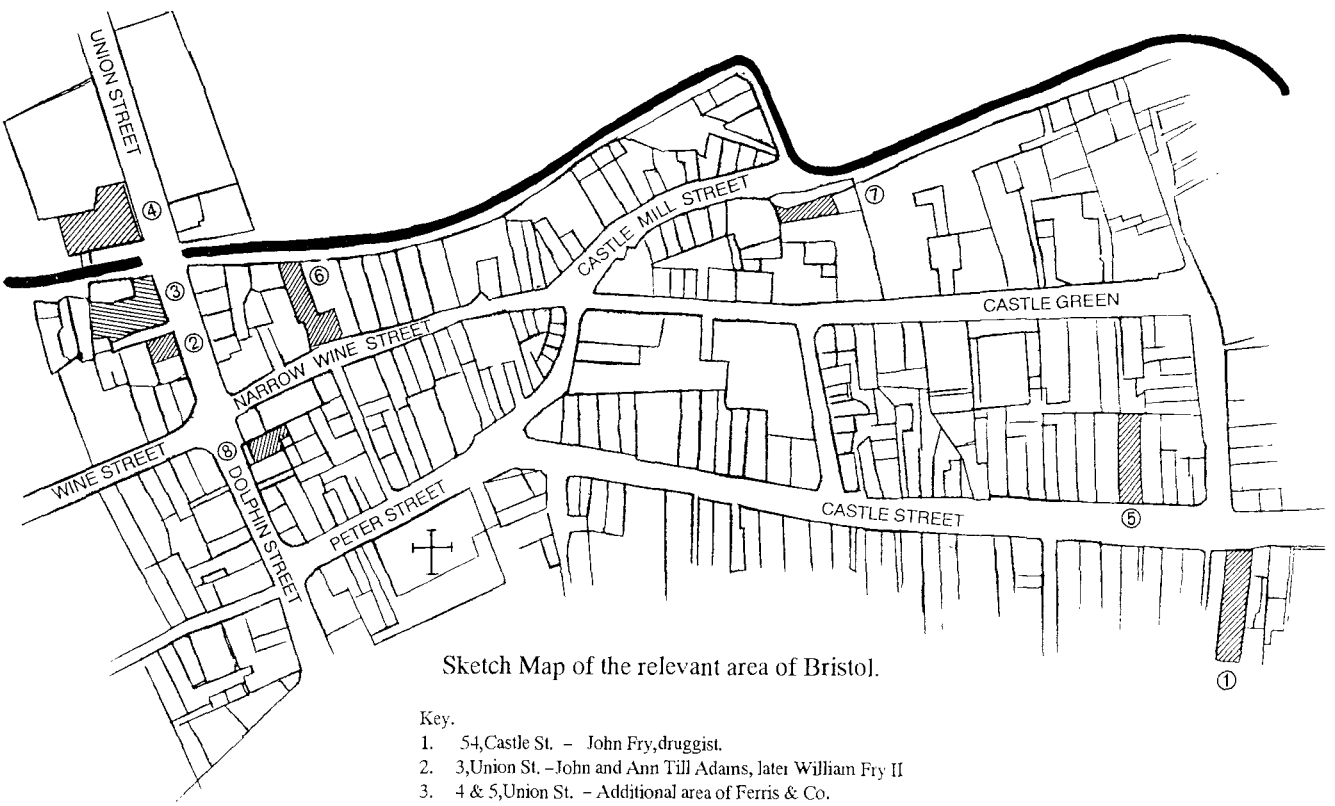
seems most unlikely that a man of barely 25 could have been involved in business of the magnitude the 1792 letter indicates.

It is possible that Cornelius' son could have joined the future firm of Ferris & Co.,either during William Fry's lifetime or after his death in 1812. In which case, at last a link is established between the ''chocolate Frys'' and the ''grocer Frys'', but this is as yet pure speculation.

Any piece of historical research is never wholly finished. Always there are more documents to be read, more material to be examined, new ideas to be tried out, and the hope that serendipity will come to your aid in solving some of the remaining problems.

References.

1. *Pharm.J.*, 2 Jan 1971,p.13.
2. Public Record Office, Inland Revenue Apprenticeship Records, I.R./1/40.
3. Bristol Record Office, Apprentice Book,p.232,17 Feb.1761
4. B.R.O., Docs.11982(24) & 12143(10) Assignment and Release documents, 1Jan.1796. Assignment of the estate of William Fry under bankruptcy commission, and release of William Fry's shares in the co-partnership of Wadham, Fry,Ricketts & Co.
5. Swansea University College Library, Padley 134.
6. P.R.O., I.R./1/67. By 1805 Thomas Follett was in business for himself as a chemist & druggist in Bridgwater
7. P.R.O., I.R/1/31.



Sketch Map of the relevant area of Bristol.

Key.

1. 54,Castle St. – John Fry,druggist.
2. 3,Union St. –John and Ann Till Adams, later William Fry II
3. 4 & 5,Union St. – Additional area of Ferris & Co.
4. 7,Union St.– Joseph Fry.
5. 30,Castle St. – Zephaniah & Robert Fry, clothiers.
6. 4,Narrow Wine St. –Fry & Vaughan,chocolate makers.
7. Churchman's Water Mill – Fry & Vaughan's mill for grinding cocoa beans.
8. 2,Dolphin St.– William Fry I & John Plant Fry I.grocers
   (Both also of Castle St.)

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